LACUS
FORUM
XXXI

Interconnections

UIC
UNIVERSITY
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AT CHICAGO

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Edited by

**Adam Makkai,
William J. Sullivan &
Arle R. Lommel**

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PREFACE

The thirty-first LACUS Forum was held 27 to 31 July, 2004 at the University of Illinois at Chicago (UIC). The Conference theme for this special meeting held during the thirtieth anniversary year of LACUS' founding and the resultant volume was *Interconnections*, a theme intended to encourage linguists to think seriously and creatively not only about the interconnections that exist among all aspects of linguistic structure, but also between languages and everything else in human experience, including art, music, and ritual and all other cognitive processes. Also included in this theme were the relationship of the tools of linguistics to other disciplines (such as computing), and tools from other fields (such as brain-imaging tools) to linguistics.

As many readers may recall, LACUS was founded in 1974 at Lake Forest College in early August. The run-up time to this first LACUS symposium was no more then four months, as preparations for our foundation meeting had not started until April of that year. Thus the first LACUS Forum took place in the 'Zero Year', and our thirtieth Forum, which took place in 2003 at the University of Victoria, actually happened in our twenty-ninth calendar year—hence the discrepancy between the thirtieth anniversary and the thirty-first forum. Lake Forest College is but thirty miles north of the UIC campus, and so to hold our thirtieth calendar anniversary meeting in 'Chicago Land' seemed particularly appropriate.

The opening session started with welcoming remarks by the local organizers, John S. Rohsenow, Adam Makkai, and Clark Hulse, Executive Vice Provost for Academic Affairs and Dean of UIC's Graduate College, followed by Sydney M. Lamb, Chairman of LACUS' Board of Directors.

Klaus-Uwe Panther of the University of Hamburg presented the Inaugural Lecture on 'Metonymic Reasoning Inside and Outside of Language'. This lecture addressed the reasoning used to arrive at conclusions from both linguistic and pictorial data, and this volume contains images of three paintings, reproduced with the kind permission of the Art Institute of Chicago, that Panther used to illustrate his lecture.

William Benzon, author of *Beethoven's Anvil: Music in Mind and Culture*, delivered the first invited lecture of the Forum, 'Music, the Social Mind and Language', in which he discussed the importance of the rhythm and vocalization of music and language in the formation of mental states. Michael Silverstein delivered the second invited lecture, 'Cultural Knowledge, Discourse Poetics, and the Performance of Social Relations'. John Lucy rounded out the invited lectures with 'The Impact of Language Diversity on Thought'. These three lectures together helped define the theme of interconnections and introduced Forum attendees to enlightening perspectives on the connections between language and broader cultural phenomena. Of these lectures, Silverstein's appears in this volume.

In keeping with the LACUS tradition, the past presidents issued the Presidents' Post-Doctoral prize for the best paper presented by a scholar who has held a doctorate or

its equivalent for five years or less; this award, for the second time in a row, went to Patricia Casey Sutcliff of Colgate University for her paper 'Connecting William Dwight Whitney with the Neogrammarians: Maria Whitney's Trip to Leipzig 1880-1882'. The Presidents' Pre-Doctoral Prize (for the best paper presented by a scholar who has not yet obtained a doctorate) was awarded to Martin Hilpert of Rice University for his paper 'From Causality to Concessivity: The Case of *just because*'. Both of these prize-winning papers appear in this volume.

Connie Eble, a founding member of LACUS delivered the Presidential Address, 'Slang and Interconnections', on July 31 during the annual presidential banquet held at the Harrison Street Holiday Inn. Eble's lecture was followed by a thirtieth calendar anniversary remembrance, during which Adam Makkai, the first Executive Director and Director of Publications, and Valerie Becker Makkai, the first Secretary-Treasurer and Program Organizer, were acknowledged for their commitment and consistent effort on behalf of LACUS during its first two decades.

The studies presented in this volume went through a rigorous selection process including review of abstracts, peer-review by a selected body of LACUS members, and close editing by the editors of the volume. Many a month has passed between the first editorial meeting and the time this volume goes to press, and many papers were rewritten not just once, but three or even four times. In the 'old days' before computers this level of revision and care would have been an impossible task.

The categorization of papers, of course, is always a somewhat thorny problem, and the editors have striven for a simple categorization. As a result, the papers are split into two major categories: 'Interconnections within language' and 'Interconnections between language and the world'. The former includes those papers that treated language as system and emphasized internal connections within linguistic systems, while the latter includes those papers that connect language to some aspect of reality outside of the system of language, such as writing, culture, the neurology of the brain, or broader scholarly thought. In addition, two papers from the Thirtieth LACUS Forum that were not included in the last LACUS volume are presented here.

To our regret, conference organizer John S. Rohsenow retired from the editorial process due to illness in his immediate family. Adam Makkai handled the process of shepherding papers through the peer-review and major revision phases. William J. Sullivan then undertook the time-consuming task of copy-editing the selected papers and coordinating editorial revisions with the authors, all while teaching in Poland. The final editing and typesetting were handled by Arle Lommel. The editors would like to thank everyone who assisted in the editing of this volume, with special gratitude to LACUS Chairperson Sydney M. Lamb and LACUS Publications Director Shin Ja J. Hwang.

July 2005.

- Adam Makkai, William J. Sullivan *&* Arle R. Lommel

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LECTURES

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PRESIDENTIAL ADDRESS

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SLANG AND INTERCONNECTIONS

Connie Eble
University of North Carolina at Chapel Hill

THIS IS THE SIXTEENTH TIME I have talked about slang to a LACUS audience. My first presentation on the topic was at the sixth LACUS Forum in Calgary in 1979, twenty-five years ago. It was the starting point of my research on slang. In subsequent summers, with the encouragement of LACUS colleagues, I made forays into some of the many dimensions of slang. Tonight's foray is about the interconnections that make slang work. There are two kinds of interconnections usually associated with slang, social and mental. Social and affective ones establish interconnections between users. That is the main function of slang. Mental interconnections give rise to the rich and colorful metaphors, metonyms, and allusions of slang.

The very nature of slang is rooted in social connections. The power to evoke feelings of being connected to others—of belonging to a group, of being accepted, and of being socially secure—distinguishes slang from other sorts of informal vocabulary. People who use the same slang feel connected to each other and disconnected from those who do not. *Phat* and *swell,* for example, are denotatively comparable, both meaning 'good' in a sentence like 'That was a *phat/swell* concert'. The choice of *phat* rather than *swell*, or vice-versa, gives no distinguishing information about the concert. It reveals the different groups that the speakers identify with and feel connected to.

Mental connections are responsible for the large portion of slang vocabulary that evokes meaning by indirect reference and that requires users to search for connections in their shared cultural knowledge. The current youth slang word *sketchy* offers an example of the mental connections typical of slang semantics. 'A place or situation that is scary or potentially dangerous' is called *sketchy*, i.e., only the outlines appear; the details are missing. *Sketchy* then serves as the starting point for connections of various kinds. By shortening, it becomes *sketch,* without a change of meaning. By metonymy, *sketch* becomes *sketchpad* and *sketchbox*, with a grammatical and semantic change to a +human noun, as in 'Stay away from him—he's a sketchpad'. *Sketchpad* and *sketchbox* wind up as metaphors for 'someone who is scary or potentially dangerous'. The metonyms, metaphors, and allusions that constitute such a large portion of a group's slang are all the result of making connections. Some are far ranging, although not every possible connection along the way is always realized as a vocabulary item. For example, *ink on paper* is a possible metonym of *sketch* also, but as far as I know it is not a slang term for 'someone who is scary or potentially dangerous'.

These social and mental interconnections of slang are well known.

Tonight's remarks focus on connections across time. I shall step into the moving stream of American college slang at two points—in the spring semester of 1974 when

BAD	74:	good; extremely good, to the extent that it inspires fear.
	04:	synonym of TIGHT = trendy, impressive, interesting
BOMB	74:	go joyriding in an automobile
	04:	obtain a failing grade
COOL	74:	smoking marijuana or taking drugs
	04:	synonym of TIGHT = trendy, impressive, interesting
COP	74:	try to get possession of
	04:	synonym of GANK = steal
DUDE	74:	any person, usually a male
	04:	noun of address
FUCKED UP	74:	high as the result of drugs or alcohol
	04:	Synonym of CRUNK = drunk and high at the same time
RAUNCH	74:	RAUNCH OUT – offend by making sexual remarks or using vulgar language
	04:	RAUNCH (adj.) – sexually explicit; dirty, disgusting
RIP	74:	RIP OFF – underpay or overcharge
	04:	Synonym of GANK = steal
STRAIGHT	74:	innocent, naive, or prudish
	04:	satisfactory
TIGHT	74:	frigid; drunk; nervous; referring to music, well-practiced and playing together
	04:	trendy, impressive, interesting
TOOL	74:	person not worthy of respect
	04:	very unhip male

Table 1. *UNC-CH Slang 1974 vs. 2004: Items submitted in both years.*

Adam and Valerie Makkai were putting together the program of the first LACUS Forum and in the spring semester of 2004 when the program of this 31st LACUS Forum with the theme 'Interconnections' was taking shape.

The sampling of American college slang at each point has equivalent limitations. In each of two semesters separated by thirty years, students enrolled in an introductory English linguistics course at the University of North Carolina at Chapel Hill were asked to write down to hand in ten items that they considered 'good, current campus slang'. In each instance, most of the students were juniors and seniors seeking teacher certification in English or language arts, 19–22 years of age, female, white, and overwhelmingly monolingual native speakers of English from the state of North Carolina.

In the spring semester of 1974, students submitted 197 slang items; in 2004, 200. Of these, 11 are the same in form. No pair, though, is identical in both form and meaning. See **Table 1**.

To me, the two senses of *bomb* suggest that the 2004 use is not a development of the earlier one, and connecting the two senses of *tight* is also a stretch. For the remaining nine, I think it is likely that the 2004 use represents a sequence of slight semantic changes from the 1974 use. Thus, excluding *bomb* as a match, 95% of the items submitted in 1974 are no longer 'good, current campus slang'. From the opposite perspective, the retention of slang items over thirty years in these data is 5%[1]. The fact that five of the ten matches (*bad, cool, cop, fucked up,* and *rip*) were submitted by students in 2004 only as synonyms of more trendy terms (*tight, gank,* and *crunk)* might well indicate that even these five are falling into disuse or diminished status as slang. (*Tight* and *gank* were among the ten slang items most frequently submitted in Spring 2004.) Thus, if student slang separated by thirty years is to be connected at all, it is not by identity of form. The actual words are almost entirely different.

What makes a word or expression slang is not form but its social and affective function. One obvious way in which slang helps to bring about in-group connectedness is by providing multiple vocabulary items in subject areas of interest to the group. For any group—college students, rock musicians, surfers—slang vocabulary applies to only a small spectrum of the members' life experience and knowledge. For example, neither in 1974 nor in 2004 did students submit vocabulary that referred to aging, health, government, religious worship, individual rights, investments, taxes, and other topics of general concern in American society.

An examination of these sets of college student slang from 1974 and 2004 shows a high congruence of subject matter. In at least one of the years at least five items were submitted in each of these 15 subject areas: positive and negative evaluations; alcohol and drugs and their use; sex and anatomy; travel, depart; feeling dejected, tired, or angry; dress and grooming; acquire, steal; bother, treat badly; food and non-alcoholic drink; someone with a particular interest; specific to UNC-CH; school work; perform well, succeed; expression of affirmation; threat or physical violence. In 1974, these topics accounted for 72% (142/197) of the submissions; in 2004, 76% (152/200).

In each year, the three areas with the highest number of terms were 1) positive and negative evaluations (74: 44/197; 04: 60/200); 2) alcohol and drugs and their use (74: 23/197; 04: 21/200); and 3) sex and anatomy (74: 10/197; 04: 21/200). These three areas together account for 34% of the 1974 submissions and 51% of the 2004 submissions. **Table 2** (overleaf) shows the number of slang items for each subject area in each year.

What does connect UNC-CH student slang of 1974 with that of 2004? In both eras slang helps college students feel connected to others going through the same post-high school stage of life. The function shapes the subject matter categories. It appears that the function of slang for young people living together in order to acquire the formal educational credentials to enter full adulthood has not changed to a great degree over the past three decades. To be sure, the particulars of college students' social lives

	Topic	1974	2004
1	**Positive and negative evaluation** 74: *cosmic, bummer*; 04: *the bombness, ghetto*	44	60
2	**Alcohol and drugs and their use** 74: *stoned*; 04: *crunk*	23	21
3	**Sex and anatomy** 74: *do work, bush*; 04: *sexcapade, cooter*	10	21
4	**Travel, depart** 74: *bun this j*; 04: *bounce*	8	5
5	**Dejected, tired, or angry** 74: *pissed*; 04: *apeshit*	7	2
6	**Dress and grooming** 74: *groomed to zoom*; 04: *ice*	7	4
7	**Acquire, steal** 74: *get up with*; 04: *gank*	7	6
8	**Bother, treat badly** 74: *shaft*; 04: *bag on*	7	3
9	**Food and non-alcoholic drink** 74: *grease*; 04: *get one's grub on*	6	2
10	**Someone with a particular interest** 74: *motorhead*	5	0
11	**Specific to UNC-CH** 74: *arb*; 04: *Top-O*	5	6
12	**School work** 74: *dot a test*; 04: *bomb*	5	1
13	**Perform well, succeed** 74: *burn up*; 04: *wax*	3	6
14	**Expression of affirmation** 74: *right on*; 04: *woot*	3	10
15	**Threat or physical violence** 74: *go to someone's head*; 04: *mean mug*	2	5
	TOTAL	142 (72%)	152 (76%)

Table 2. *Topics represented by at least five slang items.*

have changed drastically with the coming of the personal computer, the internet, cell phones, and other new means of communicating with each other.

Despite the resemblances between the overall content structure of their slang, the students of 1974 and 2004 and their worlds are not the same, and neither is 95% of

their slang. The differences between the numbers of items in equivalent subject matter categories and what the specific slang items allude to suggest some different realities the two groups of college students faced—realities that are important enough to their social well being to show up in their slang.

For example, in 1974 three terms of ethnic designation were reported, all referring to African Americans: *blood, brown sugar,* and *groid.* In 2004 the sole term submitted was *blasian*, a blend of *black + asian*, acknowledging the greater ethnic diversity now evident in the United States and on college campuses. In 1974, words concerning homosexuality were *chicken, dyke, fag,* and *gay.* The one 2004 submission, *gayboyfriend,* is more nuanced than the simple labels of thirty years ago and shows a more recent awareness of the complexities of gender preference. *Gayboyfriend* is a 'gay male participant in a platonic relationship with a female, sometimes for the purpose of appearing heterosexual to outsiders', as in 'You think Sue dates Frank, but he's just her *gayboyfriend*'. In 1974 the words specifically for females were *chick* and *foxy mama*, one only mildly derogatory and the other a compliment. The 2004 words are more explicitly sexual and derogatory: *butterface* 'female with an attractive figure but a less-than-appealing face'; *daunch* 'proud female from New Jersey who dresses provocatively and is hard drinking' (<*dame + raunch*?); *faghag* 'female with an affinity for male homosexuals'; *milf* 'extraordinarily attractive woman of one's mother's generation' (< *mother I'd like to fuck).*

In some categories, the students of 2004 seem more positive in outlook. Consider the largest category, Positive and Negative Evaluations. The 2004 students submitted 29 positive evaluative words, e.g. *bangin', the junk, off the heezy fo'sheezy, pimp,* and *tight,* and 31 negative ones, e.g. *bogus, chunt, ricockulous,* and *shitbox.* This compares with just 6 positive evaluative words in 1974, e.g. *bad, cosmic, rush,* and *together,* and 38 negative ones, e.g. *bad bongos, friggin', jackshit,* and *out of one's tree.* To keep the implication of positive spirit in current college slang in perspective, in both years the negative words (74: 38; 04:31) outnumbered the positive ones (74: 6; 04: 29). The 2004 group also gave 10 expressions to show agreement and support (*aight, be down with, feel, fo'shizzle, go 'head, my bad, shizam, straight, word up, woot),* compared with three from 1974 (*for sure, right on, wrought iron).* Students of 2004 volunteered six words for performing well (*dominate, kobe, pop, rule, wax,* and *work*) and only two for feeling dejected or angry (*apeshit* and *go bitchcakes*), as opposed to three words for performing well from 1974 (*burn (up), bust ass, tough it out)* and seven for feeling dejected or angry (*burned out, down and out, fall back, hacked off, mind raped, pissed (off), p.o.'d).* The more recent group submitted three words for bothering or treating badly (*bag on, call someone out, serve).* This is opposed to seven from 1974 (*bug, knock, put the pinch on, raunch out, shaft, use, wham).* However, for threats or physical violence the 2004 group submitted five words (*clock, jounce, kill, mean mug, stick*) as compared with two from 1974 (*go to someone's head, you had better).*

The 1974 group was perhaps more concerned with school work, turning in five words (*ace, dot a test, football course, pull an all-nighter, slide).* The 2004 students submitted only *bomb,* 'to fail a test or course'.

The 1974 students submitted five names for someone who follows a particular interest—*flipper freak* 'one who plays pinball machines' , *groupie, Jesus freak, jock, motorhead*—but none for fraternity and sorority members. The 2004 set is reversed: there are no words for people with special interests but four referring to fraternities and sororities, all derogatory—*fratastic, fratmattress, fratstar, sorostitute.* The 1974 students offered no synonyms for friend, but the 2004 submissions include *boy, dawg, homeslice,* and *homey,* all from African-American influence.

Distributed throughout the subject categories in 2004 are words and expressions that entered college slang from the hip-hop culture, e.g. *blingbling, dawg, floss, gank, ghetto, holla back, ice, ill, mack, pimp, playa, the po-po, props, shorty, shoutout, wanksta, word up.* Because 1974 predated the popularity of hip-hop, words from this segment of popular culture do not occur in the earlier set.

Dare I summarize the connections between the two sets of college slang thirty years apart by using linguistic terminology widely used at the time of the founding of LACUS? That is to say, the deep structure is equivalent but the surface structure differs.

I'll end with a recent incident that illustrates the interconnections that often underlie slang.

I received a phone call from a young reporter at the *St. Petersburg (Florida) Times.* He wanted to know about the word *cooter* as a slang term. Inverness, Florida, a community near St. Petersburg, is planning a summer festival named The Cooter Festival, after a kind of turtle that inhabits the waters in that area. Some people snickered at the name of the festival, because in its slang meaning *cooter* refers to 'an intimate part of the female anatomy'. The amusement intensified when another reporter called attention to the naming in a column that pointed out that *cooter* was vulgar to people beyond provincial Gulf Coast Florida. The locals of Inverness knew *cooter* only as a kind of local turtle and did not appreciate the publicity associating the name of their festival with a slang vulgarism, nor the insinuation that they were unsophisticated because they did not know the sexual sense.

The meaning 'kind of turtle' attached to *cooter* in the American South many generations ago. The *Dictionary of American Regional English* (Cassidy 1985) records *cooter* as a term applied to various kinds of turtles in the South Atlantic and Gulf States. Attestation of this meaning dates from 1832. As with some other regional vocabulary of the South, *cooter* appears to have entered English from the Niger-Congo languages of southern slaves (cf. Mandingo *kuta*). For the people of Iverness, Florida, then, a *cooter* is a well-established local way of saying 'turtle'.

The *Random House Historical Dictionary of American Slang* (Lighter 1994) has this meaning for *cooter* and in addition 'the vulva or vagina', as attested on two college campuses in the South in 1986 and 1987 and 'usually considered vulgar'. A cross reference leads to a phonologically similar term with the same meaning, *coozie* or *cooze,* which is abundantly attested with citations from the 1920s through the 1970s. Possibly the vulgar slang *cooter* arose by association with the similar sounding *coozie.*

However, a more likely route of development is suggested in Jonathon Green's *Cassell's Dictionary of Slang* (Green 1998). Here the entry for *cooter* lists both the

slang and the regional meaning for the term but also gives the cross reference *snapping turtle. Snapping turtle* (and its variant *snapping puss)* is a late 20th century slang expression for 'vagina'. If a 'vagina' is a *snapping turtle,* and if another name for a *snapping turtle* is a *cooter,* then a 'vagina' is a *cooter.* I suspect that the slang vulgarism that showed up on college campuses in 1980s was a connection between *snapping turtle* and *cooter* made by a southerner[2].

   I hope that the civic leaders of Inverness stretch a banner with COOTER FESTI-VAL in big letters across the main street. In bold testimony to the interconnections that can underlie slang, COOTER is the product of interconnections between Africa, slavery, wildlife of the American South, widespread images of male and female coupling, southern speech, the sex-talk of college students, and wholesome small town community life.

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[1]   In discussion following this presentation, Stephen Straight pointed out—without implying that this is what happened–that the persistence of nine of 197 items (or the loss of 188 of 197) over a period of 30 years works out to a loss of 10% of the slang items per year. A quick comparison of the 197 items from 1974 with slang items submitted in spring 1984 and in spring 1994 shows for each an identity of 10 terms with 1974, but not necessarily the same 10 terms. In no instance does the same slang item show up at all four points (1974, 1984, 1994, 2004). Four items (*crash, cruise, jones,* and *slide*) were submitted in 1974, 1984, and 1994 but not in 2004. Two items (*cool* and *tool*) were submitted in 1974, 1994, and 2004 but not in 1984. Because the data on which these matchings are based was not collected or designed to be the basis of a longitudinal study, they cannot be used to infer anything meaningful about rate of vocabulary loss. Thomas Nunnally at Auburn University has been working on designing a reliable instrument to measure vocabulary loss in the slang of his college students.

[2]   I would like to thank Jonathon Green for sending me his earliest citation of *snapping turtle* 'vagina', from the 1958 novel *Candy* by Terry Southern, and for situating *snapping turtle* in the 'vagina dentata fantasy' shown by terms like *snatch, snatchbox, snapper*, and others (e-mail communication, 22 July 2004). In discussion following the presentation, Peter Maher pointed out that in cultures throughout the world the turtle, with its head that extends from and retracts into its shell, is an image for sexual intercourse.

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INAUGURAL LECTURE

METONYMIC REASONING INSIDE AND OUTSIDE LANGUAGE

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COGNITIVE LINGUISTS AGREE THAT METONYMY, like metaphor, is a pervasive cognitive phenomenon in natural language and thought. Metonymy is not just a rhetorical flourish, a way of speaking to embellish discourse, but reaches beyond the confines of language and constitutes an interesting case of interconnections between language and other domains of human experience. Indeed, I propose that the ability to reason metonymically is a general-purpose cognitive faculty found both inside and outside language.

The article is organized as follows. In section 1, I provide a characterization of some prototypical properties of metonymy. The focus is on one high-level metonymic operation, the EFFECT FOR CAUSE metonymy, and its subtypes, which are illustrated with a number of linguistic examples.

In section 2, I argue that the EFFECT FOR CAUSE metonymy also operates outside language. To support this claim I discuss three paintings (by Rembrandt, Corot, and Caillebotte), whose common sense interpretation crucially involves reasoning from effect to cause. There is thus at least one semiotic domain other than language in which the EFFECT FOR CAUSE metonymy is used as a fundamental interpretive principle.

Finally, in section 3 I discuss the implications of my analysis for Sperber and Wilson's recent hypothesis (2002) that the understanding of inferentially derived meanings in natural language is only possible through the workings of a specialized component of the mind, a dedicated comprehension module.

1. PROTYPICAL PROPERTIES OF METONYMY. In cognitive linguistics the study of (conceptual) metonymy has received increased attention in the last decade and it has been argued that metonymy is as fundamental to an understanding of the workings of language and the mind as conceptual metaphor (see e.g. Radden & Kövecses 1999, Panther & Thornburg 2003a, Ruiz de Mendoza & Otal Campo 2002). The notion of metonymy that cognitive linguists assume is, however, much broader than in traditional rhetoric. In the following sections some characteristics of metonymy as understood in this paper are developed in more detail.

1.1. THE BASIC METONYMIC RELATION. Some basic properties of metonymy are represented in **Figure 1** below (also see Panther & Thornburg 2003a, forthcoming). In cognitive linguistics, metonymy is regarded as a cognitive phenomenon, i.e. a thought process of associating a *source* concept with a *target* concept within one conceptual frame or domain. The larger ellipse in **Figure 1** represents the assumption that the

Form: <linguistic vehicle>

Content: SOURCE MEANING ⟶ TARGET MEANING

ICM   OTHER MEANING COMPONENTS

——— signifier–signified relation
⟶ contingent associative/contiguous relation
┄┄⟶ possibly non-activated metonymic links
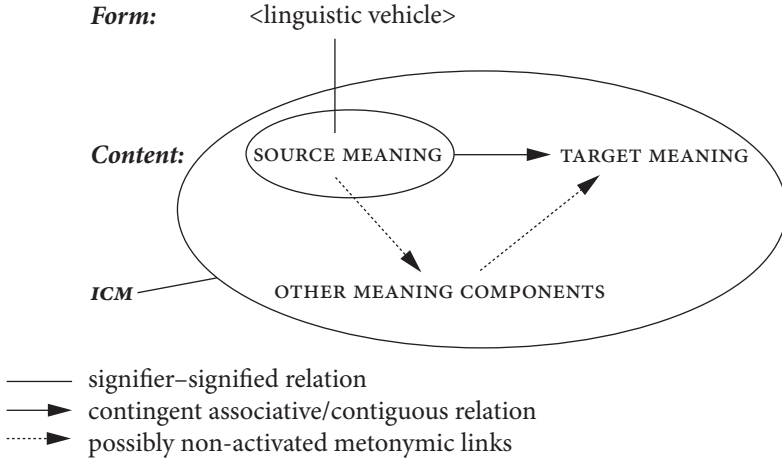
Figure 1. *The basic metonymic relation.*

metonymic mapping takes place within one cognitive domain or *Idealized Cognitive Model* (ICM—see Lakoff 1987 passim)[2]. In a linguistically manifest metonymic relation, the source meaning is related to the target meaning by means of a linguistic form (e.g. morpheme, word, phrase, sentence) that I call the *linguistic vehicle*[3]. Figure 1 indicates the assumption that the source meaning is not obliterated by the target meaning, but that it is still, to some degree, conceptually salient or activated. In fact, the selection of the source vehicle and its meaning is crucial to an adequate understanding of the intended target meaning[4]. The solid arrow in **Figure 1** represents those metonymic links in the domain that are activated; the dotted arrows symbolize possible but not necessarily activated connections. **Figure 1** does not provide any information about the degree of relative conceptual prominence of source and target, but I argue below (section 1.5) that in a prototypical metonymy the target meaning is conceptually more prominent than the source meaning. Nor does **Figure 1** indicate how stable or conventional the target meaning is. Indeed, the target meaning can be just a *nonce* sense, created on the spot, but it can also, through frequency of use, become a completely entrenched meaning.

1.2. METONYMY AS MEANING ELABORATION. In general, the source content of a metonymy seems to be contained (in a broad sense) in the target content. Containment does not imply meaning inclusion but refers to the source meaning as being a conceptual part of some more elaborate conceptual structure. Metonymies can therefore often be paraphrased by means of constructions in which the source expression is syntactically embedded in the target expression:

(1)   [TARGET ... [SOURCE ...] ...]

Some common referential metonymies illustrating schema (1) are:

(2)   a. Here comes the *Ferrari*.
         [_{TARGET} the person [who drives the [_{SOURCE} *Ferrari*]]]
      b. Paco likes *Mozart*.
         [_{TARGET} the music [that [_{SOURCE} *Mozart*] composed]
      c. *Paris* has confirmed the visit of the American president.
         [_{TARGET} the person [who is authorized to speak for the French government,
         which is located in [_{SOURCE} *Paris*]]]

In (2)a, the concept *Ferrari* is used to refer obliquely to the concept 'Ferrari driver';
in (2)b, *Mozart* is used to access 'Mozart's music'; and in (2)c, *Paris*, in the given con-
text, makes accessible the concept of '(spokesperson for) the French government'. In
all these cases the source meaning is syntactically embedded in the syntactic matrix
structure that paraphrases the target content.

1.3. CONTINGENCE OF THE METONYMIC RELATION. Conceptual metonymy is often
characterized as a 'reference-point' phenomenon (Langacker 1993, 2000) in the cog-
nitive-linguistic literature, where one conceptual entity provides access to another
conceptual entity. This characterization—useful as it is—unfortunately overgeneral-
izes, i.e., it covers cases that should not be treated as metonymy. Sentences (3) and (4)
illustrate the problem:

(3)   *The piano* is in a bad mood.
(4)   *The loss of my wallet* put me in a bad mood.

In sentence (3) the subject noun phrase *the piano* may metonymically be interpreted
as 'the musician playing the piano'. The source meaning 'piano' provides mental access
to the target meaning 'piano player' and can therefore be used as a kind of conceptual
substitute for the latter[5]. Analogously, one could claim that in sentence (4) the mean-
ing 'loss of my wallet' provides access to the meaning 'non-possession (of the wallet)'.
Are we therefore entitled to conclude that the relation between the concept of loss and
that of non-possession is a metonymic relationship, just as the relation between the
concept of piano and that of piano player is metonymic? Intuitively, the answer seems
'no'; and in fact, there is an important difference between the two cases. In sentence
(4) the relationship between 'loss' and 'non-possession' is *conceptually necessary*, i.e.
the proposition presupposed by the referring expression *the loss of my wallet*, viz. 'I
lost my wallet at time t', **entails** 'I did not have my wallet for some time period begin-
ning at time t'. In contrast, in sentence (3), the relationship between the piano and
the piano player is **contingent**; the existential presupposition 'There is a (contextu-
ally unique) piano' does not entail 'There is a piano player'. In other words, there is
no metonymy LOSS FOR NON-POSSESSION, but there is an often-exploited metonymy
MUSICAL INSTRUMENT FOR MUSICIAN, a submetonymy of OBJECT FOR USER.

The attribute of contingence that I claim characterizes metonymy is reminiscent of the property of **defeasibility** or **cancelability** that in Gricean pragmatics is assumed to be a characteristic of conversational implicature (in contrast to semantic implication (entailment)). Defeasibility and contingence are, however, not necessarily synonymous: a relation between concepts may be contingent, i.e. conceptually non-necessary, but in a given linguistic or communicative context the target meaning may still be virtually uncancelable. Other factors that impede cancelability of the target meaning are, for example, the inherent tightness or strength of the metonymic link (see section 1.4) or the coercive force that the meaning of a grammatical construction may exert on the interpretation of a lexical item used in the construction (see section 2.1).

1.3. PRAGMATIC TYPES OF METONYMY. The pragmatic functions of metonymy extend beyond the purely referential level. I claim that metonymic reasoning is also operative on the predicational and the illocutionary level. The three types are briefly illustrated in sentences (5), (6), and (7), respectively.

(5)   Auster started *a new book*.

In (5) the noun phrase *a new book* is most likely metonymically interpreted as 'writing a new book' or 'reading a new book', i.e. *book* is reinterpreted as a (typical) event in which the book in question is involved. What is not cancelable is the 'event' reading of *a new book*, but the specific event that the speaker of (5) intends to refer to is in principle defeasible. The sentence in isolation would also be compatible with an interpretation where Auster might have been involved in dusting, binding, etc. a new book—not writing one.
     A predicational metonymy is exemplified in sentence (6).

(6)   Her (= Mary's) parents *allowed* Mary to go to Florida.

In many contexts, utterance (6) would lead the hearer to the inference that Mary actually *did* go to Florida. This is an example that reaches beyond the traditional rhetorical notion of metonymy. Conceptually, it is however analogous to standard cases of referential metonymy as exemplified in (5). There is a shift from the modal source meaning (in this case 'permission') to the actual performance of the permitted action[6]. This shift can be regarded as taking place within one conceptual domain: events and the modalities of their realization form a conceptual whole. The inference from permission to the actual performance of the permitted action is however cancelable; in (6), Mary might have received permission to go to Florida but did not undertake the trip.
     Finally, I also assume that there are even illocutionary metonymies. The well-known phenomenon of indirect speech acts can be accounted for on a metonymic basis:

(7)   I would like you to close the window.

In utterance (7) the expression of the wish of the speaker with regard to the action to be carried out by the addressee (signaled by *would like you to*) metonymically evokes the *request* to close the window (see Gibbs 1994, 1999; Thornburg & Panther 1997; Panther & Thornburg 1998, 2003b; Ruiz de Mendoza & Pérez Hernández 2001, 2003). The basic idea is that an attribute of a speech act can stand for the speech act itself in the same way that an attribute of a person can stand for the person. **Figure 2** provides a schematized representation of how utterances of type (7) might activate the directive illocutionary force of a request. Note that this example shows that not only concepts but also propositional forms can be linked metonymically. The metonymy link that is activated relates the mental state (source) that is associated with a directive speech act with the directive speech act itself (target).

1.4. STRENGTH OF METONYMIC LINK. In a prototypical metonymy the link between source and target is **tight** so that source and target may become almost indistinguishable. Fauconnier and Turner (1999, 2002 passim) refer to this process of tightening as 'shortening of metonymic distance' or 'compression'. The stronger the metonymic link between source and target is, the more difficult it becomes to cancel the target meaning (see Panther & Thornburg 1998 for more detailed discussion). For example, it is extremely difficult to cancel the metonymic implication that utterance (7) is meant as a request to close the window. The connection between source and target may, however, be much looser. If the speaker verbalizes a more peripheral component of the speech act scenario sketched in **Figure 2** (overleaf), such as *The window is open*, then the conceptual distance between source and target meaning increases by one conceptual link in comparison to utterance (7), and it is therefore easier to cancel the target meaning. One can say (8)a without being pragmatically inconsistent; however, (8)b has an odd ring to it:

(8) a. The window is open, but I'm not asking/requesting you to close it.
     b. #I would like you to close the window, but I'm not asking/requesting you to close it.

1.5. PROMINENCE OF METONYMIC TARGET. Utterance (7) is also a good example of another property that I claim characterizes prototypical metonymy: its target meaning is conceptually more prominent, i.e. more highlighted, than its source meaning. To be sure, the (literal) source meaning of (7) is not obliterated, but its main purpose is that of a quasi-conventional trigger for accessing the intended directive speech act meaning. This claim is supported by the fact that it would be natural for a third party who overheard Mary saying (7) to John to describe Mary's linguistic action as a request (or even an order).

The best evidence that the target meaning is relatively more prominent than the source meaning comes from constraints on pronominal coreference. The grammatical and semantic features of a pro-form agree with those of its antecedent and, in the case

Form: \<I'd like you to close the window\>

THERE IS A WINDOW

H CAN CLOSE
THE WINDOW

THE WINDOW IS OPEN

Content: S WANTS H TO CLOSE THE WINDOW

S ASKS H TO CLOSE THE WINOW

H IS WILLING TO CLOSE THE WINDOW

H IS UNDER AN OBLIGATION TO CLOSE THE WINDOW

**SPEECH ACT
SCENARIO**

H WILL CLOSE THE WINDOW

——— signifier–signified relation
———▶ contingent associative/contiguous relation
·······▶ possibly non-activated metonymic links
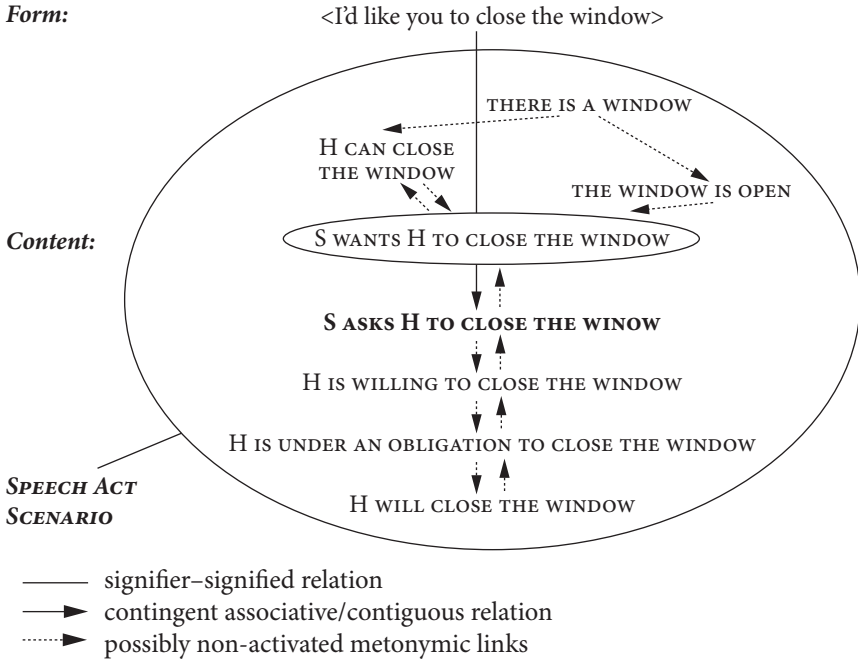
Figure 2. *An example of illocutionary metonymy.*

of metonymy, it is to be expected that the conceptually more prominent meaning of the antecedent will determine the shape of the pronoun. Consider the following contrast:

(9)   After *Mary* built her house, *she* went on a four-week vacation.
(10)   *The trumpet* was pretty bad during rehearsal, but *he* was brilliant on opening night.

Sentence (9), on one reading, may describe a situation in which Mary herself does not build the house at all, but hires an architect and craftsmen, who are in charge of the actual construction process. One might argue that *Mary* is metonymically used to stand for 'the architect, the workmen, etc. hired by Mary (to build her house)'. However, this meaning is not conceptually prominent, because the pronoun *she* may refer to Mary, the person, but not to the group of people who work for her. The grammatical and semantic features of *she* in this case agree with the semantic features of the source meaning. I conclude that although there is a connection between Mary and the group of people who build her house, this is not a prototypical metonymic relation.

The situation is quite different in (10), where *the trumpet* metonymically refers to 'the trumpet player', and it is this target meaning that determines the grammatical shape of the coreferential pronoun (*he*) in the second clause. In this case, the target meaning is conceptually more prominent than the source meaning, and this

EFFECT FOR CAUSE

RESULTANT
SITUATION
FOR
CAUSING
SITUATION

PERCEPT
FOR
CAUSE

SYMPTOM
FOR
CAUSE

RESULTANT
STATE
FOR
ACTION
*Be rich in ten
months!*

RESULTANT
EVENT
FOR
ACTION
Win a free TV!

BEHAVIOR
FOR
CHARACTER
*Bill's a jumpy
guy.*

BODILY
REACTION
FOR
EMOTION
Bill blushed.

GUSTATORY
PERCEPT
FOR
CAUSE
*What's that taste?
Garlic.*

AUDITORY
PERCEPT
FOR
CAUSE
*What's that
noise?
The wind in
the willows.*

OLFACTORY
PERCEPT
FOR
CAUSE
*What's that
smell?
The bread in
the oven.*

SYMPTOM
FOR
DISEASE
*She's got
whooping cough.*

Figure 3. The taxonomic structure of the EFFECT FOR CAUSE metonymy.

is reflected in the morphology of the anaphoric pronoun (see Panther *&* Thornburg 2004 for more details on conceptual prominence and coreference).

2. THE HIERARCHICAL STRUCTURE OF THE EFFECT FOR CAUSE METONYMY. Metonymies, like metaphors, are organized in conceptual systems, and one major organizing principle seems to be taxonomic. I demonstrate this for one high-level metonymy that is ubiquitous in language, the EFFECT FOR CAUSE metonymy. In **Figure 3**, for purposes of illustration, I list some subtypes of the EFFECT FOR CAUSE metonymy without claiming that the proposed classification is in any way exhaustive or completely accurate at this stage. Some of the metonymies listed in **Figure 3** are illustrated and discussed in section 2.1.

2.1. SOME EXAMPLES OF THE EFFECT FOR CAUSE METONYMY INSIDE LANGUAGE. In this section I briefly comment on two subtypes of the EFFECT FOR CAUSE metonymy in **Figure 3** in more detail. The first is a good example of an extremely tight metonymic connection between source and target, i.e. a 'vital relation' in the sense of Fauconnier and Turner (2002:92, passim), demonstrating the impact of constructional meaning on lexical meaning. In such a case the target meaning seems virtually uncancelable.

CM: DIRECTIVE

Be rich in ten months

LM: STATE

RESULT → ACTION

CM: Construction Meaning

LM: Lexical Meaning

⟶ : metonymic relation
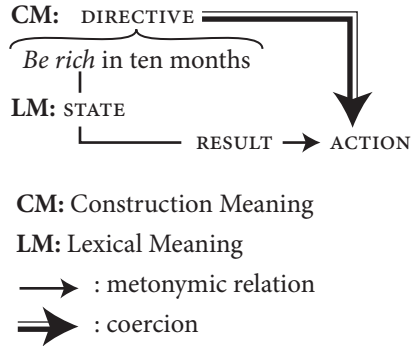
⟹ : coercion

Figure 4. Metonymic coercion of lexical meaning I.

The second example is more pragmatic in nature in that the metonymic link between source and target is somewhat looser and more context-dependent.

The first type is illustrated by the RESULTANT STATE FOR ACTION metonymy in **Figure 3** repeated here as (11), which could be an advertisement or commercial message:

(11)   Be rich in ten months!

This sentence sounds perfectly normal, but strictly speaking, it exhibits some kind of semantic anomaly. There is a conceptual conflict between the stative adjective *rich* and the constructional meaning of the imperative, which, in the default case, requires an action predicate. This conceptual clash is resolved by assigning (11) an interpretation paraphrasable as 'Do something to the effect so that you will be rich in ten months'. In other words, the desirable state of being rich is interpreted as being brought about by some non-coded action(s). The action meaning of the imperative construction is responsible for this reinterpretation of the stative predication as an (intentional) action. This phenomenon is known as 'coercion' (Pustejovsky 1993) or 'semantic shift', which Leonard Talmy (2000:324) defines as follows:

> When the specifications of two forms in a sentence are in conflict, one kind of reconciliation is for the specification of one of the forms to change so as to come into accord with the other form.

In sentence (11) it is the specification (meaning) of *(be) rich* that changes to accord with the specification of the imperative construction[7]. This situation is represented in **Figure 4**.

The full pragmatic meaning of (11) is, however, more complex than shown in **Figure 4**. The illocutionary force of the imperative sentence (11) is not only **directive** but also **commissive**. The message conveys the additional pragmatic meaning that the advertiser is committed to an action or actions that will result in the addressee's
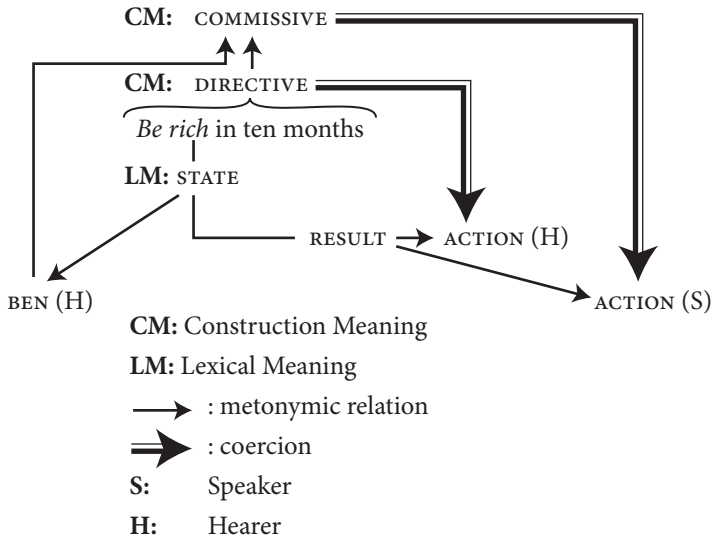
Figure 5. *Metonymic coercion of lexical meaning II.*

wealth. This additional commissive force of the imperative results from an assessment of its propositional content ('Addressee H will be rich') as beneficial/desirable to the addressee. A state-of-affairs that is beneficial to the addressee is a characteristic attribute, i.e., in speech-act theoretic terms, a felicity condition, of promises (see Searle 1969:58-59). As diagrammed in **Figure 5**, both the directive force and the commissive force coerce an actional meaning: The directive has the propositional content 'Addressee H will do Action A' and the commissive has the propositional content 'Speaker/Author S will do Action A'. **Figure 5** represents some of these additional pragmatic properties of (11).

In cases like (11), the action interpretation is **enforced**, which seems, at first sight, to undermine my contention that metonymy is a **contingent**, i.e. in principle, **defeasible**, relation. But a closer look at sentence (11) reveals that the relation between a state and the action leading to that state is indeed contingent—any number of actions can lead to the same resultant state. That is, there is no relation of semantic entailment between 'x is a state' and 'y is the action that leads to state x'. But one can make reasonable guesses; for example, in the case of *Be rich in ten months* one can think of a variety of actions (audacious investments, purchase of shares, etc.) that might lead to the desired result of being rich[8].

A somewhat looser connection between source and target meaning exists in (12), where a physiological process is characteristically interpreted as being caused by some emotional state of the subject referent:

(12)   Bill blushed.

On hearing (12) a hearer will assume that Bill blushed, because he felt shame or embarrassment, but it is easy to discard these causes as explanations of his behavior:

(13)   Bill blushed, but not because he felt embarrassed/ashamed/…

Note, however, that *blush* seems to narrow down the range of possible emotional causes that result in the physiological reaction of becoming red in the face. For example, it is not felicitous to say of a person that she blushed from anger. Nevertheless, it is not possible without additional contextual clues to pin down the exact cause(s) of blushing, and in this sense, the relation between effect and cause is clearly conceptually non-necessary, i.e. contingent.

2.2. THE EFFECT FOR CAUSE METONYMY IN VISUAL ART. Is it possible to find metonymic principles like the ones I have demonstrated so far in semiotic systems outside language? It is beyond the scope of this paper to pursue this question with a larger set of high-level metonymies, but I claim that the EFFECT FOR CAUSE metonymy is a fundamental interpretive principle that people systematically use to make sense of pictorial representations[9].

Pictorial representations (if we disregard films) are by necessity static, but of course they are not perceived as merely representing states. Western art abounds in paintings and sculptures that are supposed to represent actions, and this fact alone points to the existence of metonymic interpretation principles that project from inherently static situations (necessitated by the medium of representation) to dynamic target situations. Another property of pictorial representations is that the artist cannot directly depict states of mind or dispositions, such as emotions, moods and character traits, whereas in natural language a non-figurative representation of such mental states and dispositions is often possible. For the visual artist, one, if not the only, way of depicting the inner world of a human being is via metonymy, in particular by subtypes of the EFFECT FOR CAUSE metonymy.

Let us consider three masterpieces of visual art whose interpretation involves spontaneous reasoning from effect to cause: Rembrandt's *Old Man with a Gold Chain* (ca. 1631), Corot's *Interrupted Reading* (ca. 1870), and Caillebotte's *Paris Street; Rainy Day* (1877), all of which are on exhibit in the Art Institute of Chicago[10].

The first of these paintings (reproduced in **Figure 6**) is described by the Art Institute in the following way:

The Art Institute is fortunate to own many works in different media by the great Dutch master Rembrandt Harmensz. van Rijn. *Old Man with a Gold Chain* depicts one of Rembrandt's favorite models from his early years. The unidentified man's proud, weathered face is illuminated by Rembrandt's evocative and dramatic light and he wears the opulent costume (one of many the artist kept in his studio for such models) with dignity and ease. Through images such as this, the ambitious, young Rembrandt displayed his technical
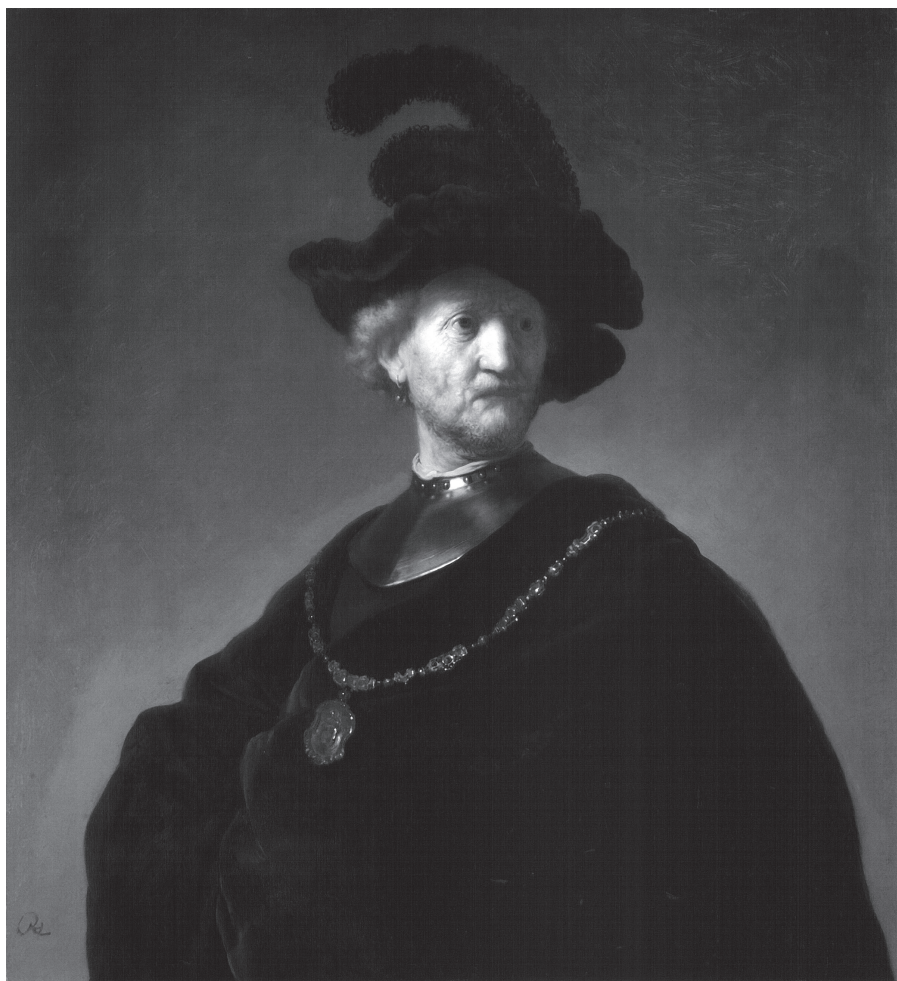
Figure 6. *Rembrandt Harmenszoon van Rijn, Dutch, 1606-1669, Old Man with a Gold Chain, c.1631, Oil on panel, 3203/4 x 29 3/4 in. (83.1 x 75.7 cm), Mr. and Mrs. W. W. Kimball Collection, 1922.4467. Photograph by Bob Hashimoto. Photography © The Art Institute of Chicago.*

skills and revealed concerns that would increasingly absorb him, such as the nobility of the spirit and the wisdom of age.

The above description of this painting is an excellent example of metonymic inferencing from effect to cause, e.g. the facial expression of the person (effect) reflects the character (cause) of the person portrayed: the man is taken to be proud ('proud face') and dignified. He is at least middle-aged, if not old, as can be inferred from the 'weathered skin' of his face. Finally, the gold chain may be taken as an index of higher

Figure 7. *Jean Baptiste Camille Corot, French, 1796-1875, Interrupted Reading, c.1870, oil on canvas mounted on board, 92.5 x 65.1 cm, Potter Palmer Collection, 1922.410. Photography © The Art Institute of Chicago.*

social status. I take it that these inferences are all instances of the EFFECT FOR CAUSE metonymy, i.e. essentially not different from the inferences at work in the linguistic examples discussed in section 2.1.

In the 19th century painting shown in **Figure 7** the metonymic link between bodily posture and facial expression, on the one hand, and the states-of-mind causing them, on the other hand, are even more striking. Again the description provided by the Art Institute is revealing:

> The unidentified woman in *Interrupted Reading* is pensive, solitary, and melancholic, the very essence of Romantic sensibility. Using bold and direct brushwork, Jean Baptiste Camille Corot explored the female form as a construction of masses that balance and support one another. A gentle light and subtle colors infuse this formal structure with the softness and intimacy that characterize the landscapes with which the artist achieved his fame.

The quote nicely demonstrates an extremely tight metonymic connection between effect (source) and cause (target) in Corot's painting. The body posture and the facial expression (source) of the young woman are not described as such, but they are directly linked to the feelings that are assumed to cause them. Note that the author characterizes the young woman as *being* 'pensive, solitary and melancholic'. There is thus an immediate conceptual leap to the target content. The interpretation of this painting is a striking example of metonymic tightening, in this case, a conceptual compression of effect and cause.

As a final example, let us briefly consider a famous painting belonging to the same period as Corot's *Interrupted Reading*, namely Gustave Caillebotte's *Paris Street; Rainy Day* (1877) reproduced in **Figure 8** (overleaf). Here again, without being art connoisseurs, viewers readily draw some fast and spontaneous conclusions based on the EFFECT FOR CAUSE reasoning schema. Although there are no dark clouds and no visible precipitation depicted in the painting, the viewer immediately knows that it is raining, because the pavement is wet and people are walking around with unfolded umbrellas.

In conclusion, there are clearly a number of properties that visual art metonymies share with linguistic metonymies.

First, in both language and visual representation, the relation between source and target is contingent and therefore in principle defeasible, i.e. not conceptually necessary. For example, in Corot's *Interrupted Reading*, the young woman's body posture and facial expression are strong indicators of her underlying mood, but they are only indicators—no more. The causes attributed by the viewer to the young woman's posture and facial expression may turn out to be wrong. Similarly, the beholder may be mistaken about the age of the man with the gold chain represented in Rembrandt's painting. Second, analogously to prototypical linguistic metonymies, the source-target relation is tight, i.e. source and target are conceptually compressed and may be virtually indistinguishable. This is definitely the case in Corot's painting, where the distinction between *looking* pensive/melancholic (effect) and *being* pensive/melancholic

Figure 8. Gustave Caillebotte, French, 1848-1894, Paris Street; Rainy Day, 1877, oil on canvas, 83 1/2 x 108 3/4 in. (212.2 x 276.2 cm), Charles H. and Mary F. S. Worcester Collection, 1964.336. Photography © The Art Institute of Chicago.

(cause) seems quite pedantic. Third, the target concept in pictorial representations may be just as conceptually prominent as in prototypical linguistic metonymy. For example, without paying any attention to the title, in Caillebotte's painting the idea of a *rainy* Paris street (target) presents itself immediately to the beholder although no rain is visible. Finally, the access to the target is fast and spontaneous. As in the interpretation of linguistic meaning, sensory input is subjected to automatic inferencing, below the level of awareness, so that the borderline between what a person sees and the inferences drawn on the basis of what is seen is often blurred.

If these observations are essentially correct, they have consequences for a recent proposal made by Dan Sperber and Deirdre Wilson concerning the cognitive status of inference-based comprehension in natural language. In the final section I briefly discuss Sperber and Wilson's conjecture.

3. IS THERE A DEDICATED (INFERENTIAL) COMPREHENSION MODULE? Recently, Dan Sperber and Deirdre Wilson have made an intriguing suggestion about how inferential pragmatics fits into in an overall picture of the human mind (see Sperber & Wilson 2002, Wilson 2003). These authors propose that pragmatic inferencing is an exercise in higher-level mind-reading, a task-specific cognitive process. Pragmatic comprehension is supposed to be monitored by a sub-module of skill that normal children have acquired by the end of their fourth year: the ability to make correct assumptions about the beliefs, desires, and intentions of others:

> [M]ind-reading is not a single, homogeneous module but a set of special-purpose mechanisms or submodules […]. I have argued that these may include a dedicated comprehension mechanism, an evolved 'mental organ' with its own special-purpose inferential principles or procedures. (Wilson 2003:314)

Wilson (2003:317) sees a crucial difference between the assessment of the relevance of communicative acts and of actions in general. She assumes that the addressee of an overt communicative act can expect the utterance 'to be relevant enough to be worth his attention'. In contrast, in the case of actions of others, the observer is not believed to have such expectations. This may be true for the interpretation of (non-communicative) actions, but what about the function of relevance in semiotic systems other than language? The semiotics of visual representations is surely, as we have seen, in many respects quite different from that of language(s); but with regard to the inferential mechanisms at work, visual interpretation and linguistic comprehension exhibit interesting analogies in that they both seem to make use of the same interpretive principle, the EFFECT FOR CAUSE metonymy, and possibly other metonymic principles. If this is correct, the idea of a 'dedicated comprehension mechanism' seems somewhat unlikely.

The thesis that there is a pragmatic comprehension module can also be challenged from a different angle. Sperber and Wilson make a binary distinction between spontaneous (subconscious) pragmatic reasoning and deliberate, reflective (conscious)

reasoning. But it stands to reason that this sharp distinction is questionable. The inference schemas used in deliberate, reflective reasoning do not seem to be different in kind from the 'fast and frugal heuristic' (Wilson 2003:317) at work in spontaneous metonymic inferencing. The fact that effect-to-cause reasoning, a kind of metonymic reasoning, may be performed consciously, but also spontaneously (subconsciously) in both utterance comprehension and in the interpretation of visual representations, weakens the claim that there is a specialized comprehension module dedicated exclusively to the task of retrieving pragmatic senses. A weaker hypothesis seems to be in order: Conceptual metonymy is an *all-purpose inferencing device*, a general more-or-less conscious cognitive mechanism that is used productively inside and outside language.

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[1] I am very grateful to the editors of LACUS *forum 31* for their assistance in preparing the manuscript for publication and to William Sullivan for his comments on an earlier version of this article. My special thanks go to Adam Makkai and Sydney Lamb for their support in the reproduction of the pictorial representations in this paper. Finally, I would like to thank the Art Institute of Chicago for granting permission to reproduce three paintings from their collections.

[2] To distinguish mappings within one domain (metonymy) from cross-domain mappings (metaphor) is not always easy. Discussion of this issue is found in e.g. Barcelona (2000 passim), Dirven and Pörings (2002 passim), and Ruiz de Mendoza and Otal (2002 passim) where it is argued that the boundary between metonymy and metaphor is fuzzy.

[3] Not all theories make a distinction between *vehicle* and *source*. For example, Radden and Kövecses (1999) use the term 'vehicle' to refer to the linguistic sign that triggers the metonymic relation as a whole. Ruiz de Mendoza and Otal (2002) use the term 'source' in the same function. Radden and Kövecses (1999) regard a number of other relations as metonymic, including relationships of form in euphemistic usages such as *Gosh* for 'God' or *shoot* for 'shit', which I regard as more peripheral examples of metonymy.

[4] The vehicle, i.e. the form of a sign, may also contribute meaning. Formal properties that have an influence on pragmatic meaning (implicatures) have been described by Grice (1975) under the rubric maxim of manner. In this paper, only the vehicle's conventional sense (which I call source meaning) is considered.

[5] Another possibility is to interpret *the piano* metaphorically (personification), i.e. as a sentient being with feelings, emotions, moods, etc.

[6] This metonymic shift from potentiality to actuality is analyzed in more detail in Panther and Thornburg (1999b).

[7] Some of the ideas that follow are developed in more detail in Panther and Thornburg (1999a, 2000).

[8] Note that the paraphrase of the target meaning of (11) is roughly:

     [$_{\text{TARGET}}$ Do something to the effect [so that you will [$_{\text{SOURCE}}$ *be rich*]]]

where the source content is 'contained' in the target meaning, which is expressed in the

matrix structure. This is a case of source meaning elaboration in the same sense as in examples (7)a–c.

[9]   Other metonymies that I assume would be relevant in the interpretation of visual representations are those that rely on the viewer's capacity to reason from the present to the future. For example, certain body postures seen in pictures are spontaneously interpreted as indications of subsequent actions. There thus seems to be an analogue of the linguistic metonymy PRECONDITION (OF ACTION) FOR ACTION in the domain of pictorial representation.

[10]   In what follows, it is not my aim is to provide in-depth critical interpretations of the three masterpieces but rather to demonstrate how a naïve viewer would comprehend such visual representations.

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INVITED LECTURE

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CULTURAL KNOWLEDGE, DISCOURSE POETICS, AND THE PERFORMANCE OF SOCIAL RELATIONS

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DISTINCTIVELY CULTURAL KNOWLEDGE, knowledge one has by virtue of group membership, is generally taken to be a perduring characteristic of mind that individual interlocutors bring to events of discursive interaction. Interlocutors are believed to display and to use such knowledge in the course of establishing, maintaining, and transforming social relations. How? I present an extended example in order to analyze how interactions come to space- and time-bound textual formedness—are entextualized—as intersubjective facts by both explicit and implicit poetic organization of the verbal and other signals. I propose that such entextualization at the same time contextualizes language use relative to interlocutors' knowledge, in effect performing social relations by the way moves achieve the mutual alignment of interlocutors to bits of knowledge indexically in-play over the course of an interactional segment. The empirical criterion of distinctively cultural knowledge, then, would be how it is indexically invoked or indexically entailed by the poetic formedness of interaction in context; distinctively cultural knowledge is context-dependent in this way.

As you can discern from my title, there's a little bit of cognition in it (cultural knowledge), and there's a nod to form, at least of textual form insofar as grammar and poetics covers it, and there's a promise of society. Society manifests as group, as I shall be terming it when looked at from the micro-contexts of discursive interaction; it manifests as social structure in the perduring macro-order of identities that we perform. And it is the connection among cognition, language form, and society that has been one of the objects of my concern for some decades, and about which I want to present some models today.

For some time I have been thinking about whether there is specifically cultural knowledge, as opposed to all other kinds of knowledge, and how it might be constituted. Knowledge such as that objects feel hot to the degree they contain a certain otherwise unmanifested substance, caloric. Or knowledge that language is located in a grammatical organ not physically identifiable. Or that in the year 2003 the government of Iraq possessed weapons of mass destruction. Or that diamonds are harder than quartz. (Truth or falsity is not at issue, note.) Specifically cultural knowledge must rest on social interaction—the so-called social transmission thesis. This condition, of course, in and of itself, does not really restrict such knowledge in any way: even science, as we now understand, is itself the most profoundly social of processes of the development of knowledge. Scientific cultural knowledge in some practical way—as I would be the first to assert—is highly cotextually systematized and correct

knowledge of the world around us, that is, knowledge usefully presupposed as we go about the art of living and further exploring that world in myriad specialized ways. But where does whatever might be termed cultural knowledge reside? What is its ontological condition? Most importantly, how might we go about discovering the particular cultural knowledge that specific populations of humans might have?

Put another way, how might we go about discovering what is specifically cultural *in* knowledge, fractionating it out in the manner of a chemist cracking a complex cognitive goo on the basis of well-founded investigative techniques, regardless of the almost certain existence of other kinds of knowledge emerging in us from non-cultural sources that may also be revealed to be characteristic of us humans? (Note for example how many linguists these days jump to the conclusion that knowledge of at least some aspects of any language is **not** cultural in this sense. To what degree this is so is a rather open issue, it seems to me.)

Cultural knowledge is that vast amount we know about the world—maybe the universe—by virtue of having probed it group-relatively in the company of others, proximately or remotely, through whatever means of transmission and familiarization. Cultural knowledge is accessed—necessarily I want to maintain—each and every time we use words and expressions of a language in discourse, and—much more important to see—cultural knowledge is created and spread in-and-by the use of words and expressions in organized textual form.

Cultural knowledge ranges between what philosophers have dubbed, with folk labels, the poles of 'knowing-how' and 'knowing-that'; the full-tilt version is 'culturally knowing-that', I will maintain. (Note that as an anthropologist I cannot endorse the lexicalized distinction of philosophers between *knowing-that* and *believing-that* as more than cultural knowledge itself. See **Figure 1**.)

At one extreme, the knowing-how pole, the principles of organization of semiotic form frequently manifest people's intuitions of coherence in discursive and other semiotic realtime: thus, knowing how to do formulaic things with articulation, to coin a phrase, to perform something with cotextual integrity, i.e. to produce a text, whether or not in denotationally conforming language, by the way. This is ritual knowledge, knowledge of interaction ritual, as Erving Goffman would term it, where genre conventions for accomplishing something are some group's norms against which we plot, plan, intend, interpret, and react to human action, including linguistic action. Such knowledge need not be conscious and strategic, by the way. Such knowledge is frequently manifested nonverbally, as for example knowing how to do a particular dance, by oneself or with another person. On the verbal behavior side, it includes, for example, knowing how to use magical spells of the cause-and-effect sort, even of the nondenotational sort such as *Abracadabra* or *Zalagadoola-mishigaboola-bibbetybobbetyboo*; it includes knowing how to take turns-at-talk, in whatever pattern of simple two-participant (A;B);(A;B)… alternation or more complex type; and so forth. Knowing how to interact socially does not necessarily involve language in the denotational mode, of course—think of the interpersonal realm of kissing and other

Folk Label	Indexing	Nonlinguistic Behavioral (Observable) Examples	Linguistic (Transcribable and Interpretable) Examples
'knowing-how'	+ **metaprag-matic knowl-edge of** *co*-**textual indexicality**	Dancing	Saying 'Abracadabra!' ? Speaking 'grammati-cally'
'knowing-that'	+ '-**onomic', text-in-context mprg. knwl.**	Sorting blocks by criterion (Vygotsky)	Making 'logical' deno-tational coherence in reference and modal-ized predication
' "culturally" knowing-that' [= knowing-how indexically to invoke know-ing-that so as to 'do things with signs']	+ **mprgm. usable/used** '-**onomic' knowledge**	Making a (con-ventional) illocu-tionary gesture, e.g., winking (*bzw*. blinking); Performing a nonverbal ritual routine	Making denotational (in)coherence *count-as* illocutionary act (in)appropriate to and/or (in)effective in context

Figure 1. *'Knowing-how', 'knowing-that' and 'culturally' knowing that.*

intimacies—though what is seen as the illocutionarily-normed perlocutionary effec-tiveness of actual language use certainly has the characteristics of a 'know-how'.

There is at least in part a conventional formedness to human action, a poetics or co-textual dimension of indexical internal cohesion of signs-across-spacetime; human action constitutes a text, and we read such texts, triangulated with much other data. The anthropologist tries to read such texts in conjunction with much explicitly deno-tational text-about the texts of action. From these one tries to extract cultural values that implicitly underlie the very formedness, or genred-ness of action, which may be by degrees, (in)appropriate and (in)effective under particular circumstances and of which the participants may themselves not even be spontaneously aware.

But when social interaction turns on the use of what folk observers would call ordi-nary language, we have the social skill of knowing how to make denotational sense. This is how one achieves an overall rhetorical architectonic of a coherent denotational text, a saying something about something in text-sentence units, each of which con-forms to system-sentence grammar (to make John Lyons's useful distinction), and the whole of which shows proper Hallidayan lexical ligatures and other cohesive devices of grammar across the conforming text-sentences. Observe that grammar and composition teachers as well as rhetoricians try to make explicit, to externalize,

Inexplicit	Use of linguistic forms in conformity with grammaticosemantic knowledge encoded by them, including lexical primes:

e.g., *…so I gave *the pregnant man* my seat on the bus this morning.

Use of proper co-textual indexicals across text-sentence boundaries, including reference- and other indexical grammatical machinery and –onomic relations among lexical forms serving as ligatures:

e.g. *I met *my wife*$_i$ at the restaurant, as agreed. But *he*$_i$ surprised me by having invited along…

…of the sentence in *the*$_k$ *indicative* [   ]. But *this*$_k$ *mode* is only one of several …   [taxonomy]

vs.

Explicit	Use of specific, sometimes differential *metasemantic* construction types that denote specific sense relations among expressions (and hence knowledge structures that anchor 'concepts'), e.g.:

- [definitional sense equivalence] <u>An</u> *ophthalmologist* <u>is</u> <u>an</u> *eye doctor*. ['≡']
- [taxonomy] The *red oak* <u>is</u> <u>a</u> <u>kind</u> <u>of</u> *tree*. [full form]
- [key] The red oak <u>is</u> <u>a</u> [*deciduous*]$_{ADJ}$ <u>kind</u> <u>of</u> tree.
- [partonomy] The *council* <u>is</u> (<u>a</u>) <u>part</u> <u>of</u> the *government* of the country.
- [serial structure] The *acorn* <u>becomes</u>/<u>turns</u> <u>into</u> the *oak tree*.

Figure 2. *Explicitness of Intensional Criteria on Denotational (In)coherence (all defeasible, of course, in 'tropic' discourse!)*

our intuitions about denotational coherence, for example insisting upon the logical coherence of discourse by projecting from formal structure to propositional interpretation or normalization. They create labels or names for types of coherence relations that are instantiated by discourse under denotational evaluation—and, normatively, should be instantiated by those who want to make text according to rule.

As shown in **Figure 2**, at the level of grammaticosemantic knowledge such denotational coherence is frequently inexplicit; composition teachers, as opposed to linguists, frequently explain do's and don't's in terms of the structure of the world, projectively rationalizing the ontic defaults of the language, rather than by grammaticization of –onomic knowledge coded into agreement form-classes of the lexicon. (Thus: 'Don't you know, Johnny, that men can't be pregnant?'—rather than 'Gender-class sensitive

modification is an implicit metasemantics of classification of denotata'.) Again, at the level of macro-structure, a denotational text is coherent to the degree one can at least intuitively understand some –onomic knowledge. For example, what a composition teacher would call argument by exemplification (this being one) is a text segment that rests on the presumption of a **taxonomic** conceptual relationship, something's 'be[ing] a kind of' something else. A descriptive tour of places or locations within a region presumes a **partonomic** conceptual relationship, something's 'be[ing] a part of' something else; etc.

Observe how this kind of schematic as a description of denotational relations can be invoked as a predicate of two arguments 'be-a-kind-of (x,y)', 'be-a-part-of (x,y)', making the intuition about discursive coherence **explicit** in a **metasemantic scheme** describing what someone would know, inter alia, about x's and y's in the world to which denotational language applies. Observe that **knowing how** to make denotationally coherent text involving expressions for x and for y can, in this sense, be said to rest in effect upon the fact of someone's **knowing-that** 'An [x] is-a-kind-of [y]' or vice-versa. Such knowledge-that applicable to the universe is invoked by knowing-how to speak grammatically above and beyond language-as-cotextual form; if we presume that this underlies people's ability to make denotational coherence, then we might conclude that this is a component of actual language-users' knowledge of the world, too. We can teach each other by using language that either implicitly or explicitly gives new structured –onomic relationships to concepts already –onomically structured in our knowledge base.

So denotational (in)coherence, I claim, rests on –onomic knowledge, multiply coded from top to bottom of textual structure. Then doing things with words, that is, using language both appropriately to context and effectively in context, as shown on the last row of **Figure 1**, can be seen as **the ability to make patterns of denotational (in)coherence-in-context count as the realignment of interlocutory roles in groups**. How?

One of the primordial forms of 'groupness' we constantly experience is that of interlocutors' coming to agreement or disagreement about the 'truth' or 'falsity' of some communicated, structured information. We might also call this indexing or indicating their stance with regard to this information. At each moment they add to the punctuated and segmented cumulativity of information experienced intersubjectively over interactional time, creating, transforming, and dismantling structures of relational stance-on-information-about-the-world itself. This primordial, inherently momentary grouping of participants is always interactionally potent precisely as it links to a presumed-upon structure of identities already inhabited and in-play among participants up to and at the moment of communication at issue, as a dynamic image-of-groupness.

In the course of seemingly ordinary conversation, then, interlocutors index— make contextually relevant—knowledge of all kinds and manners of things, knowledge structured in the most varied of –onomic forms, both simple and complexly intersecting. Cultural knowledge as such grows; it has its own dynamic quality since

any newly-articulated (i.e. explicitly represented) relationship of denotata in dis-course, made on some particular occasion, can reveal a new way that the things of the universe go together consistent with a particular principle of coherence. Person A's privileged knowledge can be made public in this way, too, by being offered in denota-tionally explicit—perhaps charted or tabularized—form, sometimes even in the form of narrative. And perhaps then it becomes knowledge taken up, learned by person B by knowing how to add it to the store already available about particular referents and particular other denotata. Perhaps instead interrogated by person B, challenged, or negated in part or totally. The point is, cultural knowledge emerges via one's engaging in discursive interaction. This is its condition of existence; and conversely, discursive interaction as an effective group and identity constructing enterprise is the point-of-emergence and very raison d'être of cultural knowledge.

Of course, cultural knowledge includes knowledge of kinds of people (note the lurking taxonomy) and the structures that organize various identities we presume upon each time we interact. A good part of **metapragmatic knowledge**, knowing-how to do things with denotational text-in-context, is itself knowledge of such social partitions, relative to which identities and momentary role-habitations of people must be calibrated and recalibrated in an ongoing way. Interlocutors invoke such identities, plucked from conceptual schemata of social differentiation; they make them relevant to the moment at hand in interaction by assuming themselves, and demanding of others, that a stance be taken on cultural information.

Let us see how this happens in a staged, though non-scripted conversation, a bit of which is shown in **Figure 3**. I present a minimally adequate, standard-orthography transcript of this material, videotaped in ca. 1974 between Mr A, then a second-year student at The University of Chicago Law School, and Mr B, then a first-year student in the same university's School of Social Service Administration. Mr A is, in other words, the future lawyer in 1974, we might say, and Mr B the future social worker. Each had been instructed by my colleague Starkey Duncan, then interested in non-verbal communication, to have a conversation with another graduate student whom he had not before encountered. Let's follow the interaction.

This bit of conversation reveals Mr A to be in the middle of a (lawyerly?) line of ques-tioning. Like all questions, Mr A's constitute the first of a two-part, basic rhythmic unit of alternating conversational participation—the 'adjacency pair' in Conversation Ana-lytic terms (Levinson 1983:303-8;332-39). In-and-by current speaker's utterance there is a strongly entailed, symmetrical, interactionally coherent return reply or response from the original addressee, subsequently become a sender (as the original sender becomes the addressee, exchanging roles). The first turn-at-talk in the transcript is Mr A's sixth question to Mr B about where Mr B 'came from' 'before'[1].

Before when? What is the **culturally relevant framework** of *temporalization* and of sequential (serial-structure) relationships within it? And what kind of a stip-ulation of a **there** in Mr B's past would satisfy the line of first pair-part questions about **coming from** someplace as sufficient—even satisfying—second pair-part answers? In other words, what is the relevant framework of *spatialization*—physical

A

(1) Huʔúh, An' Q_A7 how do you_i líke Chicago compared [to Ø]
Q_A7 did you_i go to school thére ór uh, [wa]
[Óh], uh-húh

Óh, uh-húh
(2) Q_A8 An' you_i wént to undergraduate Ø hére ór
(3) Óh Óh Óh Óh Óh I_j 'm an óld Jesuit boy myself_j, [unfortunately]
(4)
R_A1 Ø [at] Georgetown, down [in Washington]
(It's) too bád
Í_j - [710 msec]
(5)
R_A2 Úh Yéah Wéll thís is my_j second yéar here
[And], uh, Í_j don't know,
{✗_1} It was níce
I_j sorta enjóyed it -
I_j
This place is réally réally - di dífferent -
Í_j mu' -
I_j must sáy
Bút, uh, [710 msec]
Í_j don't know,
Í_j I_j enjoyed the education there
{✗_2} And it réally was góod
It [wasn't]
(6)
[overwhélming]

B

... there ...
R_B7 [I_i] díd go to school there
I_i went to school hére álso, [úm]
um, so I_i came back kind of
I_i wa[s]
R_B8 Ø in Chicago át, uh, Loyola
[Oh áre ya_j Ø Q_B1 Where'd] you_j gó [to Ø]
[Ó:h yéah], yeah
Q_B2 Did you_j finish Ø
Óh, úh-[huh]
Yeah
[I_i think] -
Jésuit edu[cation chánged] [700 mse] a
lót in the lást five or six yéars
An' I_i think
I_i just caught
I_i caught the tail end of the uh - óf the - really óld
schóol -
Ít was
I_i - was really
I_i mean -
'cause Í_i Í_i did my_i úndergraduate work
I_i fínished that líke four yéars a [690 msec] go
fíve years ago
Ànd -
I_i think
Nów - próbably Loyola is a lót different
an' a lot bétter [690 msec]
y'_j knów
a lót more - variety of courses
being offered et cetera
ánd -
yóu_j know
I_i - I_i

Figure 3. *Transcript of conversation between Mr A and Mr B.*

or institutional—that corresponds to the temporal sequence? To what degree is each of Mr A's conversational moves, as phases in an ongoing social praxis, constraining, in any cause-and-effect way, of Mr B's moves (and vice-versa)? How do such linkages

allow Messrs A and B INTERPERSONALLY to create before our very transcriber's eyes a precipitated text (-in-context) that we can understand to be culturally coherent precisely by the way it invokes cultural concepts to achieve a reorientation of the two participants one to another? My point is that the problem of informational relevance and the problem of how discourse comes to some kind of segmentable textual form as **effective social interaction** are interrelated, and cannot be either productively stated or, certainly, solved independently[2].

Most importantly, how would we go about achieving and justifying a reading of the **interactional text** abuilding here between Messrs A and B? It appears at first to be an instance of '*Getting to Know You*'[3], a familiar **genre**, or recurrent schema, of interactional text. Indeed, all bourgeois Americans have indulged in this genre with otherwise unknown people, for example those in the airplane seat next to them, as also to more pointed purpose in clubs, bars, and similar watering holes. Messrs A and B seem to be playing it in the immediate context of Mr Duncan's video camera lens on that day in 1974, in the small room behind the Law School auditorium, south of 60th Street, on the campus of The University of Chicago, in the south side neighborhood of Hyde Park, in the city of Chicago, in the County of Cook, dot-dot-dot—as Thornton Wilder so well set out the limitless possibilities of nested contextualization in *Our Town* some decades ago[4].

It's **context**, we can see, all the way OUT from the microscopic here-and-now. But which part of the context counts, as it were, is relevant to how the interlocutors seem to move this interaction along? How is culture, and hence the interactional participant's mind as informed precisely by culture, central to giving this verbal happening its distinctive form as genred interactional text?

Those familiar with the culture recognize the interactional text to be an instance of '*Getting to Know You*'; as well, the more subtle amongst us will also recognize that we've happened upon an instance of a game of '*One-Upmanship*'[5], in the process of being embarrassingly foiled, or undone by the antagonist's own hand (= tongue). Our involvement in more or less the same specific cultural system of value helps us here to lay bare this dynamic of interactional genre in working from the transcript, that Messrs A and B seem so smoothly to be inhabiting by their participation in it. Let us return to this interactional form in its time-course of emergence.

Note that down to segment (3) in our transcript, Mr A has been the question-initiator and Mr B the respondent. Indeed, the denotational text, the information structure they have generated between them has come to constitute Mr B's inter-action-relevant biography. It is in the form of a schematic of how he moved from **there**, **then** to **here**, **now** in various domains of what we might term descriptors of personal experience, attributes of social individuals constituting aspects of their narratable identities. As Mr A anxiously presses on with the inquiry, the flow of such biographical information about Mr B in the emerging denotational text is congruent to the obvious social-structural status asymmetry between them—lawyer vs. social worker—at the moment of the discursive interaction—**here**, **now**, that is, at The University of Chicago. Hence Mr B's emergent biography augments that asymmetry in

the past and projects it out to their respective futures. For it turns out that the current interactional status asymmetry of future lawyer/future social worker in fact continues the terms of a comparable schema of their respective old school ties. Mr B's college, Loyola [University of Chicago] (R_{B8}), contrasts with Mr A's, Georgetown [University], down in Washington (R_{A1}), from their respective pasts. The status-relevant asymmetrical structure of what is indicated as the interactants' **theres**, **then** as well as their **heres**, **now** thus remains a constant over the course of biographical time from the narrated past up to the present moment (and implicated future).

Things change, however, in turn (5), when Mr A does the interactional move of opening up a bit—or so at first it seems—to reveal seemingly highly personal information: that he's drowning at The University of Chicago Law School, which he describes with the vernacular pejorative 'different', while he sailed along as a happy undergraduate at Georgetown. Whether consciously or not—consciousness being, in fact, a somewhat irrelevant dimension for seeing cultural form-in-motion—Mr B seizes on this revelation in Mr A's opening up. He presents a denotationally INCOHERENT but interactionally (subtle and) EFFECTIVE description of changes over time at Loyola University of Chicago, the erstwhile déclassé urban commuter school, the institution from **then** to **now**, going in a contrariwise, bad to good—even better—direction.

Interactionally—note, **not** in terms of standard denotational coherence—Mr B has registered the undoing of any witting or unwitting success Mr A might have gained at *One-Upmanship* up until turn (5). In fact, it seems that Mr B begins after this turning point to inhabit in earnest the identity of social worker, asking all further questions to the end of the videotape recording of the conversation. He seems to treat Mr A somewhat like a client in distress asking for help at **an intake interview**, another specific interactional genre relative to social identities: in effect, Mr B ultimately asks, 'Do you think you can handle the rough-and-tumble of corporate law after this?'—seeming almost mercilessly to turn the knife by exaggerated concern!

To MODEL the interactional text here, to account for it as effective social interaction, requires us to recognize that each of the operative semiotic forms—each quantal coding of communicated denotational or conceptual information that plays a semiotic role in the interactional storyline—occurs not just by itself; the units of effective semiosis are not, for example, simply words or lexical forms given in advance, as folk analysis might assume. Nor does any interactionally relevant sign occur purely as a function of the linguist's sentence-grammar or the one-sentence-at-a-time reconstructions of denotational text done by linguistic philosophers or conversation analysts (though of course everything can be nicely parsed according to English syntax and sense-semantics; cf. Silverstein 1985).

Each contributory bit of information, rather, fits into an emerging multidimensional array of repetition, comparison, and contrast, an organization of denotational information that is interactionally effective because it comes to entextualized formedness in a particular way in the course of conversation, not so much in a transparent poetic organization of the denotational text, as in ritual poetics. In everyday conversation like this one the operative structure occurs in an IMMANENT CONCEPTUAL

POETICS—the conceptual material organized into a VIRTUAL METRICALIZED SPACE of points that are themselves denotationally created as the referents of deictic categories and otherwise indexed by systematic categorial forms. These include such pragmatic operators as lexically coded paradigms of opposed deictic spatializers like English *here* vs. *there* and adverbs like English *now* vs. *then*; the inflectional expression of category paradigms like English tense categories of present [= nonpast] vs. past; and so forth. These organize information into a conceptual metrics, in addition to the explicit poetics of metrical repetition, constructional parallelism, and lexical ligature. This creates a complex space akin to a multidimensional crystalline structure, through which, once set up, the interpreter of an entextualization must move to get the [ritual] point being inscribed through the metrical semiosis of participants.

For example, looking at the transcript in **Figure 3**, we can observe, thus, how in Q_{A8} ('An' you wént to undergraduate [school] hére, ór' –) in (2), Mr A uses the past tense of the verb *go* in the idiomatic phrase *go to [school]* that predicates this relationship between *you* [= Mr B] and some *here*, a place-category deictic being used, in the flow of discourse, for *Chicago* (cf. R_{B7}). So note that Q_{A8} is straightforwardly a propositional schema of the rough-and-ready canonical form 'f(x,y)', 'go-to-undergraduate-school(Mr B, [Chicago])', within the spatiotemporal framework of Mr B's dialogically elicited biography-in-progress—and of his life, including the moment of interaction—that is explicitly deictically signaled by *here* and past tense, schematically, $here_B$– $then_B$.

Figure 4 presents the results of such a retranscription of the explicit metrical transcript in the framework of what we might term the **deictic metricalization** of propositional (denotational) content. Observe that a rough schematization reconstructing the propositional information in each turn is presented in the left-hand column, while in the right column are listed the deictically-anchored spatiotemporalizations seemingly in discursive focus at that very utterance-interval of the conversation. Notice that at R_{B8}, Mr B has introduced a distinction between a university-institutional framework of location, coded with small capital letters (thus: THERE$_B$ for Loyola University of Chicago) and a city-geopolitical entity framework of location, coded with lower case letters (thus: here$_B$ for the City of Chicago). At the bottom of the retranscription, I schematize the denotational content of Mr A's first pair-part in turn (5), and its corresponding second, Mr B's turn (6), which conclude the snippet of transcript. It will be immediately seen that in turn (5) Mr A describes a situation about his own past-to-present university affiliations that, for him, goes from good to bad; by contrast, Mr B in (6) describes a situation about his former university that, for him, goes from bad to good, an overall reverse direction along an evaluative dimension that is, nevertheless, closely parallel to Mr A's earlier statement.

In **Figure 5** (overleaf) I have charted what is intersubjectively shared between Messrs A and B about the roles and biographical attributes of each of them at two points in interactional time, according to the various frameworks that are contrasted along **there** :: **here** and **then** :: **now** deictic differentiations of role inhabitance and of denotational information emergent in the transcript. The first point is where our

	"objective"	deictic
Q_{A6}	$[\text{Iowa}_B] : \text{Chicago}_B$	$[\text{there}_B\text{-then}_B] : [\text{here}_B\text{-now}_B]$
$Q_{A7}R_{B7}$	$\text{go-to-school}_B([\text{Iowa}]);$ $\qquad\qquad " \qquad ([\text{Chicago}_B])$	$\text{here}_B\text{- then}_B > \text{there}_B\text{- then}_B >$ $\quad \text{here}_B\text{- now}_B$
Q_{A8}	$\text{go-to-undergraduate}_B [\text{school}]$ $\qquad ([\text{Chicago}_B])$	$\text{here}_B\text{- then}_B$
R_{B8}	$... (\text{Chicago}_B; \text{Loyola}_B)$	$[\text{here}_B\text{- THERE}_B\text{- then}_B]$
(3)	$[\text{Jesuit}(\text{Loyola}_B)] = \text{Jesuit}$ $\qquad (X_A)$	$\text{THERE}_A\text{- then}_A$
Q_{B1}	$\text{go} [\text{-to-undergr.-sch.}]_A(X_A)$	$"$
R_{A1}	$... (\text{Georgetown}_A; \text{Washington}_A)$	$[\text{THERE}_A\text{- there}_A\text{- then}_B]$
Q_{B2}	$\text{finish}_A ([\text{Georgetown}_A])$	$"$
R_{A2}	$\geq 1 \text{ yrs.}_A (\text{here}_A - [\text{now}_A])$	$[\text{HERE}_A\text{- }] \text{here}_A\text{-now}_A$
(5)	$\text{nice}_A (\text{Georgetown}_A)$	$[\text{THERE}_A\text{- then}_A]$
	$\text{A-enjoy}_A (G_A)$	$"$
	$\text{different}_A (\text{HERE}_A)$	$\text{HERE}_A\text{- now}_A$
	$\text{A-enjoy}_A (\text{education-THERE}_A)$	$\text{THERE}_A\text{- then}_A$
	$\text{really-good}_A ([\qquad " \qquad])$	$[\text{THERE}_A\text{- then}_A]$
	$[\text{overwhelming}_A (\text{HERE}_A)]$	$[\text{HERE}_A\text{- now}_A]$
(6)	$\text{change}_B (\text{Jes. educ.}_B)$	$[\text{THERE}_B\text{- then}_B] >$ $[\text{THERE}_B\text{- now}_B]$
	$\text{B-catch}_B ([\text{Jes.-educ.}_B\text{-THERE}_B\text{-}$ $\text{then}_B])$	$[\text{THERE}_B\text{- then}_B]$
	$\text{B-finish}_B (\quad " \quad)$	$"$
	$4< \underline{n} <5\text{-yrs} ([\text{THERE}_B\text{-then}_B])$	$"$
	$\text{different}_B (\text{Loyola}_B)$	$\text{THERE}_B\text{- now}_B$
	$\text{a-lot-better}_B ([\text{"}])$	$"$
	$\text{a-lot-more-courses}_B ([\text{"}]) ...$	$"$

(5) A: $\text{good}_A(\text{THERE}_A - \text{there}_A - \text{then}_A) : \text{bad}_A(\text{HERE}_A - \text{here}_A - \text{now}_A)$

(6) B: $\text{bad}_B(\text{THERE}_B - \text{here}_B - \text{then}_B) : \text{good}_B(\text{THERE}_B - \text{here}_B - \text{now}_B)$

Figure 4. *Schematic analysis of tropes of conversational rhemes.*

		Mr A	Mr B
[Conv. Role]:	'here-now'	[initiator]	[repsondent]
	:	:	:
	'there-then'	["]	["]
Experiment:	'here-now'	this-exper. conversation	
	:	:	:
	'there-then'	previous-exper. conversation	
Curriculum:	'here-now'	Law School	Soc ServAdmin
	:	:	:
	'there-then'	[ ]	[ ]
[University]:	'here-now'	[(University of) Chicago]	
	:	:	:
	'there-then'	[ ]	[(U of)] Iowa?]
City/Town:	'here-now'		[Chicago]
	:	:	:
	'there-then'		not Amana
State:	'here-now'		[Illinois]
	:	:	:
	'there-then'		Iowa

Δt

		Mr A	Mr B
[Conv. Role]:	'there-then'	[Initiator]	[Repsondent]
	:	:	:
	'here-now'	[Respondent]	[Initiator]
Curriculum:	'here$_A$-then$_A$'	Law School-1	[?]
	:	:	:
	'here-now'	Law School-2	SocServAdmin1
University:	'there$_B$-then$_B$'		Loyola-Chicago
	:		:
	'there$_A$-then$_A$'	Georgetown	[(Univ of?)Iowa?]
	:	:	:
	'here$_{A-B}$-now$_{A-B}$'	The University of Chicago	

Figure 5. *Intersubjective sharing between Mr A and Mr B.*

transcripted snippet begins; the second is where it ends.

The various frameworks, it will be noted, are realms of knowledge-about-the-world and about the interaction ongoing; in each frame are grouped together the pieces of intersubjective biographical knowledge that have emerged by that phase of interaction; note that there are fuller and more precise propositional descriptions of curricular participation and of university affiliation for each by the conclusion of the transcribed interval. The talk has been directed to, in effect, filling in the boxes for Messrs A and B within the deictically and lexically differentiated frameworks. Further, at the conclusion of this segment the interactional roles of initiator [of questions] and respondent [to them] have decisively reversed (something that in fact becomes clear only by examining the rest of the transcript [not presented here]). This creates a multidimensional array of information—here about Messrs A and B themselves, as it turns out—because the descriptive content is frankly about these two people's narratable relationships of living-in, attending- or matriculating-at, etc. with reference to certain named entities like states and cities and universities that inhabit shared cultural space.

Down through turn (4), Mr A and Mr B have been constructing conversationally usable biographies, first of Mr B under Mr A's relentless questioning, and second for Mr A, as Mr B reciprocally obliges by asking for his undergraduate institution. When, in (5), Mr A, elaborating on his answer, ventures a negative comparison of his experiences at Georgetown vs. Chicago, Mr B, in (6), launches into a description of all of the changes for the better that his undergraduate institution, Loyola, has undergone in the five or six years since he had matriculated there. But

note how what we can describe in this fashion is structured into pieces of information organized by placing each with respect to other pieces of information through the use of syntactically cooccurring deictics implying dimensions of comparison and contrast in various cultural realms of knowledge.

The conversation is thus organized into three parts: the first, starting even before the stretch in the transcript, building up the biography of Mr B; the second, ever so briefly giving the interactionally relevant biography of Mr A; and the third composed of the two denotationally disconnected evaluative judgments that count, however, as the moment of real interactional reversal for Mr A and Mr B, as shown.

So the more general principles of interaction ritual are, in a way, the same as those in any ritual. In each case, our interpretations or understandings of, and strategic self-alignments to, interactional text—in short, our interested MODELING of it—is always through the lens of available denotational form. Certain partials of denotational text—what one is saying—count as (or at least contribute to counting as) instances of performing a certain kind (or genre) of socially consequential act in emerging interactional text—what one has (or will have) done socially or accomplished in-and-by saying something. And any determinacy in accomplishing this depends on the dynamic—though orderly and intersubjective—indexical-iconic figurative value of verbal descriptors set into frameworks of knowledge structured in the **here**-and-**now** by deictics and other indexicals. In the case of explicit ritual, the hypertrophied formal metricalization of denotation makes it transparent to accomplishment of acts relative to frameworks of knowledge, including beliefs. In the case of everyday interaction ritual, the figuration depends on deictically mediated orderings of denotation that have the force of conceptual metricalizations. The semiotically operative figurations of relational stance of participants in interaction are conceptually metricalized along dimensions given by deictic usage in addition to how they may be metricalized by explicit cotextual structure.

Thus, for Messrs A and B, Mr B's nonsequitur in (6), his denotationally—i.e. logically or propositionally—incoherent description of the **reverse** direction of change of Loyola University—**his** emblem of identity—interactionally comes to count as a third phase of the interactional segment transcribed here. It is the registration of foiled *One Upmanship* and the opening move in his metaphorical self-transformation to the participant holding the better interactional position—truly a role-relational reversal from what had been going on good-naturedly up to this point.

Occasions of talk like the chat of Messrs A and B make conceptual information intersubjective (on record) in realtime through layers of form of organized text. Such form, we have shown, mediates how participants come to stand one to another and how an interaction is a dynamic of assuming and transforming relational stances by the very deployment of denotational form and its penumbra of other semiotic modalities.

Such **interactionally relevant concepts indexed** (cued) **by words-and-expressions-in-text are, of course, cultural concepts** that have a special status among the several components of meaningfulness of language. (Hilary Putnam [1975] termed them STEREOTYPES about the world.) It is important to see that such cultural concepts,

as opposed to all the other kinds of meaningfulness associable with the words and expressions used by Messrs A and B, play the decisive role in bringing this conversation to formed significance and effectiveness.

Notice, for example, how in the conversation between Messrs A and B the participants' use of certain expressions in particular metrical positions of a developing textual form indexes—invokes—STRUCTURES OF KNOWLEDGE about the world. For example, use of names like *Georgetown* in parallelistic relation to *Loyola [of Chicago]* indexes—brings to the intersubjective denotational textual microcosm—nodes in the TAXONOMY of Jesuit universities in America, just as the juxtaposition of these names of institutions concurrently invokes the denotata—for the cognoscenti—as an ordered set, or SERIAL STRUCTURE by their rank on a scale of institutional prestige giving value to their graduates' credential (or degree). Any time one uses a word or expression it indexes specific values or nodes within such knowledge schemata. Each such schema of conceptual information is now made relevant to discursive interaction as a framework projected from it (as well as now indexically anchored to it here-and-now); that is, it is specifically indexed (pointed to, gestured at) as the in-play focus of figuration (in our sense of ritual[ization]) in the interactional work being done.

What type of person, with what social characteristics, deploys such knowledge by using the expressions that normatively and actually index (invoke) it in a particular configuration of cotext? With what degrees and kinds of authority do interactants use expressions (reflecting knowledgeable familiarity from social structural position of the user with respect to ritual centers of authority that warrant their use)? To whom is authoritative knowledge ascribed, and who can achieve at least a conversationally local state of authority with respect to it, if not a perduring authority stretching beyond the instance of interaction? In such ways the variability of linguistic usage presumes upon—and points to (indexes)—the **non-uniformity** of knowledge within a community. Importantly, non-uniformity in what people know, or are at least allowed to manifest knowledge of, is a function of numerous types of social categorizations of people and people's membership in groups of various sorts, of which, then, using certain words and expressions become direct or indirect indexical signs.

We understand what is going on in the conversation between Mr A and Mr B as we can discern the centrality of the participants' predicating the 'went-to-school [= college]-at' relationship between, respectively, Mr A and Georgetown [oldest, richest, almost Ivy, though Catholic, Jesuit university right at the center of national power], and Mr B and Loyola of Chicago [located in a midwestern manufacturing and commerical center, in 1974 a generic, commuter school—evening classes!—with not much of a traditional campus]. Such associations with, respectively, Mr A and Mr B become intersubjective facts at particular points in interactional time through the verbal accounts of their biographies, in effect placing Mr A and Mr B in serially structured value positions within the overall taxonomy of Jesuit institutions. The respective social selves of Messrs A and B have been in effect wrapped in these culturally widespread 'emblems of identity' (Singer 1984, esp. 105 and refs. therein) with entailments for dynamic figuration; indeed,

such emblems are old school ties in American male, bourgeois professional society, in which, certainly, these two were locatable in 1974.

Similarly emblematic values for other sorts of signs of identity emerge through variously complex and dialectical institutionalized processes in politics, in priestly incumbencies of expertise, in brand-name allegiance-groups, and other forms of group-formation around emblems at least deictically locatable on, or in respect of, persons and even bodies in discursive interaction. Think further of people even wearing school insignia or colors on their clothing (think of the class-differentiated wearing of gang colors); think of nongovernmental individuals flying national flags on their domestic portals or even on their vehicles.

So becomes clear the interactional text, the socially coherent happening, consti-tuted by what Messrs A and B have been doing in the way of a cultural event as they were talking about this and that. Mr A has, we can now infer, been providing oppor-tunities, through relentless first pair-part questioning of Mr B at the outset of their conversation, long before and up until our snippet begins, for Mr B to predicate in second pair-parts of adjacency pair structures such a 'gone-to-school[= college]-at' relationship for himself, so as to reveal his emblem of identity; and finally in adja-cency pair (2) at R_{B8}, with some hesitation, Mr B accedes, explicitly disambiguating $here_B$, i.e. *Chicago*—note, the word is a city name as well as an informal university name (the very one on the grounds of which they are conversing)—from Loyola of Chicago (= *there_B*), his university *alma mater* ('… in Chicago, at, uhh, Loyola'). Then Mr A has his One-up moment announcing—note the descriptive framework of tax-onomy he explicitly invokes as now in play for self-other comparison—that he, too, is a Jesuit college product (for in stratified American society, below the level of the tra-ditional male prep-school WASP rich, it is generally one's **undergraduate** [bachelor's degree] institution that counts).

In the flow of talk, this creates an asymmetry of characterization between partici-pants in the co-constructed intersubjective space, for they both now know Mr B's bio-graphical emblem of Jesuit-institutional value, but do not know Mr A's. The gap can only be filled by Mr B's asking his now good-natured return question Q_{B1}, 'Where'd you go [to school]?' This will open the space for Mr A to predicate the equivalent information about himself. Note that while all he needs to do from a denotational point of view is to give the institution name as descriptor, he makes his formulation deliciously symmetrical with the one Mr B had earlier used. In response R_{A1} he predi-cates of himself having gone to 'Georgetown [University] (=*THERE_A*), down in Wash-ington (= *there_A*)'. (Mr B doesn't even wait for this last piece of locational information before launching into his next turn at utterance, it should be noted, so superfluous an added specifier is it in the in-group universe of 'old Jesuit boys' that both he and Mr A belong to!)

Deploying such biographically contingent cultural knowledge—here, for exam-ple, knowing about named Jesuit institutions—constitutes the central modality of how people establish and transform qualities of social relation. Having such cultural knowledge is GROUP RELATIVE: it is, as Hilary Putnam put it in a famous 1975 paper,

echoing the sociologist Emile Durkheim (1893), based on a sociolinguistic division of labor, in which the fact of social distribution of conceptualization is an essential characteristic of words and expressions insofar as how they become meaningful identity-signs deployed in interaction underlies their very capacity to denote.

Hence, particular words and expressions emerge in metricalized text as indexical differentiae of a discourse participant's having—or of seeming not to have—certain conceptual structures and distinctions, rendered not merely denotationally but interactionally significant at that point of discourse time. This is, as we shall see below, tantamount to indicating group or category membership of participants in a discursive interaction, both as a presupposed fact about a social world indexically anchored to the here-and-now and as a fact entailed (performatively created) for such a world in-and-by the very textually organized use of certain words and expressions at that moment. As Putnam and others have pointed out, for any denoting word or expression, the preponderance of its meaning lies in just such concepts as are revealed in usage and its co(n)textual indexical patterns, somewhat independently of the meanings signaled by formal grammatical aspects through which system-sentence constructions are shaped.

Hence, the use of certain words and expressions at a particular point in discursive realtime does more than contribute straightforwardly to denotational text: choice of word and expression marks (indexes), the user as a member of a certain group or category relative to those groups or categories of persons, things, etc. already in play through contextual and cotextual indexicalities up to that point. (See the concept of 'membership analysis' in Schegloff 1972.) It indexes thereby an in-group including that user, among whom one can presume a sharedness of specific conceptual schemata like taxonomies, partonomies, paradigms, seriations, etc. that begin and end in occasions of talk and their intertextual, interdiscursive qualities in a whole economy of verbal usage in social life.

But you can imagine a cultural outsider—even one who knows the language well enough to parse the denotational text here—seeing nothing of the nature of this interaction because knowing nothing of the stereotypic knowledge-schemata indexed by the use of specific words and expressions from culturally loaded pragmatic paradigms of not merely denotational, but indexical and emblematic value that they get in poetic context of deployment. Messrs A and B deploy this knowledge like identity-linen by hanging it out interpersonally and intersubjectively, not only in explicitly metricalized poetic turn-taking, but as well in a second, more subtle layer of deictically structured conceptual space—here's Chicago; there's Loyola; etc. They thus surround their respective conversational personae with these emblems of personal identity, negotiating and co-constructing a deictically denoted field with the polar-coordinate geometry common to any such indexed region surrounding an origin-point (here-and-now) in the person or persons communicating.

Now such stereotypic or cultural concepts are invoked in-and-by the use of tokens of words and expressions to which they are attached. Arrayed in deictic-poetic realtime, these concepts constitute the denotational space of play that gets

figurationally mapped in the practical work of interactional textuality, of inhabiting and defining this social event as starting in some state of social relations and winding up in another. Such cultural knowledge **lives and dies in textual occasions**, it should be noted. We create it on occasions of use of particular words and expressions in particular cotextual arrays one with respect to another, as much as, on subsequent occasions of use of them, we try to presume upon the knowledge previously experienced and, perhaps finding our presumption being questioned, we have to create it again or modify it for some new interlocutor. The doing of all this denotational textual work, at the same time, figurates interactional textuality, moreover, that is, coming to stand in social relation one to another, so cultural conceptualization can never be neatly abstracted from its dimension of interactionality. Rather, such textual occasions—occasions for language to be used to describe phenomena in the universe of experienceables—are occasions when people (indexically) associate specifically patterned words and expressions with specific, valued pieces of conceptual knowledge that people invoke as interlocutors in such-and-such kinds of social event. Interlocutors thereby bring that knowledge into interpersonal social space and make it relevant to their ongoing interactions, all in the very moment of seeming to fashion an individual thought.

Thought is individual only where it is non-cultural; it is non-cultural only in whatever respects it escapes our humanity, of which the essence is the social group, socially communicating.

So cultural concepts turn out to be just that, revealed in cultural practices—among them the always indexical social action of using language—and in a non-trivial way. They are empirically investigable, once we abandon the expectation that cultural concepts are analogues in folk-science to lexically coded concepts of one particular view of theory-based Western science. We do not need an articulated theory as such of any cultural domain to make clear its cultural structure relevant to the organization of social practices mediated by discursive interaction. People indexically access such structures and experientially renew and transform them each time words and expressions are used in the emerging poetic structures of denotational and interactional textuality, especially as the form of interaction ritual figurates role-identities of social action in relation to it.

This is what Messrs A and B are relying upon in their culturally fluent interaction: the mutual knowledge in fact of two University of Chicago professional-school graduate students from Catholic backgrounds with Jesuit college degrees and some understanding of the professional worlds for the ultimate inhabitance of which both are pursuing degrees. Hence, the shared, even teachable, schemes of social differentiation, of institutional differentiation, generate the specific stereotypes that are made emblematic through the use of terms that come to bear/bare them. Such is the result of socialization and enculturation, which we can see are themselves achievements of discursive and other forms of interaction (Ochs 1988; Schieffelin 1990). Thus do cultural concepts become useful to ritualized self- and other-positionings in the

Social –onomies for role-recruitment to the speech-event roles

Deictic reference (*Implicit Metricalization*) and indexical cotextualities (*Explicit Metricalization*) organizing information-flow

Predication-as-*explicit* conceptual –onomicization of referents and other denotata (already *implicitly* –onomicized) through deictically calibrated spacetime [localism hypothesis]

Inferences of transformationsof /"meta-forces"' on role-recruitment in imaginary *spaces of relational –alignment* with regard to denotational "content"

Metapragmatic poetics of role recruitment relative to reference-and-predication

Speaker; **Addressee**; **Referent(s)**; **Audience**; etc. asymmetrically recruited from social –onomies, schemata of social differentiation, with normative rights of inhabitance of such roles in various circumstances of communication; **Turn-taking** as a primordial explicit metricalization of Ig:; Pragmatic paradigms, e.g., **registers**, as Indirect indexicals

Unary, Direct, Simple (=Pure) Deictic Categories, e.g., **Person, Tense**; Unary, Direct, Complex (=Mixed) [Expl. + Impl.] Deictics, e.g., **Anaphora/Cataphora**; Binary, Direct, Simple Deictics, e.g., **Evidential/Inferential**; **Parallelism; repetition; order; weight; distance;** etc.

Nominal heads categorize referent [default: topical surface Subject] and other denotata relative to –onomic knowledge in grammatical and cultural conceptualization; **Predicate heads** and various transformed and derived surface forms of implicit predication, e.g., nominal modifiers, map –onomies onto –onomies, additively and subtractively, within and across **turns**

Explicit ("on record") and implicit (formally indexed) dynamic **stances-on- -onomicization** of Speaker, Addressee, etc. in communicated flow of information, tropes of 'truth'/'falsity' via modalities of assertion/reception

Implicit or conscious knowledge-of what has-been (*bzw.* will-have-been) done by using denotational language
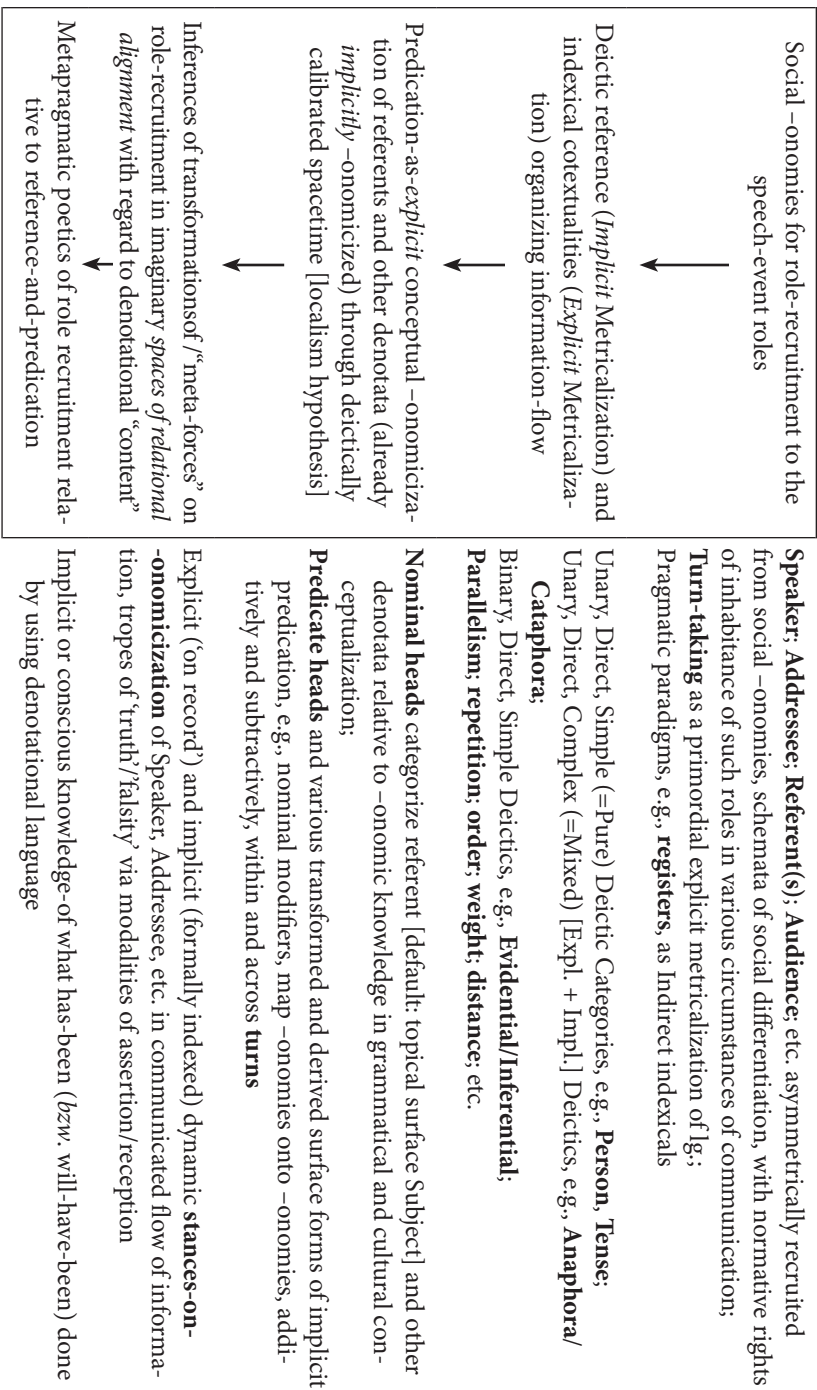
Figure 6. *Schematic of how 'What-one-Says' gets mapped into 'What-one-Does' with Words; Functional Contributions of Language Form.*

interaction: **stereotypes (**truly CULTURAL CONCEPTS**) come to life and are renewed in-and-by interaction ritual**.

We can see that all this implies, as is schematized in **Figure 6**, a functional model of how what one says theoretically gets mapped into what one does with words. This, in turn, suggests a functional decomposition of language form according to the role of the various information-coding and other components in the process. But that, as you can see, is itself a long, long story of distinct –onomic knowledge.

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[1]   Observe that each of these (type-level) expressions is inherently deictic (i.e. their characterizing effect for denotation presumes upon the contextual conditions under which a token of them occurs). Come from indexes an end-point of 'movement-to-which' that is relatively close to the here-and-now either stipulated in cooccurrent text, or, by default, presumed to be the here-and-now of the communicative context of the sender. Similarly, (temporal) before again indexes an endpoint aligned either in, or relatively closer to, the now explicitly stipulated or, by default, pragmatically presumed.

[2]   Note, by contrast, the at best culture-internal and post-hoc reconstructions of interlocutor intentions that go into Gricean doctrines of relevance, e.g. Sperber and Wilson 1986, following Grice 1989 [1967]. The starting point of such analyses is the communication of a propositionally valuated grammatical sentence, an Austinian (1975:109) 'locutionary act'. This necessitates postulating convoluted would-be chains of (logical) inference, including the ad hoc reconstruction of (propositional) descriptions of context, to map what-is-said in a turn-at-talk into what-is-communicated in-and-by it – all with a rudimentary and most rough-and-ready concept of interactional acts and events, if any.

[3]   Thanks to Richard Rogers and Oscar Hammerstein, II; cf. The King and I, musical play (1951) and film (1955).

[4]   Thornton Wilder's *Our Town - A Play in 3 Acts* (1938) (New York: Coward-McCann *&* Geoghegan) won that season's Pulitzer Prize for Drama.

[5]   Thanks to Stephen Potter, *One-upmanship: Being some account of the activities and teachings of the Lifemanship Correspondence College of One-upness and Gameslifemastery* (1952, London: R. Hart-Davis).

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MARIA WHITNEY'S TRIP TO LEIPZIG 1880–1882: A WOMAN'S PERSONAL CONNECTION AND PUBLIC EXCLUSION

Patricia Casey Sutcliffe
Montclair State University

MARIA WHITNEY (1830–1910) was one of two sisters in a family of very notable men. Most accomplished and famous were her two older brothers, Josiah Dwight Whitney (1819-1896), the Harvard geologist after whom Mt. Whitney is named, and William Dwight Whitney (1827-1894), the Yale philologist. Although her connection with her brother William is the most relevant for us as linguists, her brothers Henry and James, too, were public men. Henry was the librarian at Blackstone Memorial Library (and formerly Professor of English Literature at Beloit College), and James was the librarian at the Boston Public Library (*Springfield Union*, WP). Maria, however, was somewhat accomplished in her own right, particularly for the age in which she lived, when women were just beginning to have access to higher education. Her most public achievement was being the 'first incumbent of the Chair of Modern Languages in Smith College' (Seymour 1894:271–72), where she taught German and French from 1876 to 1880, after being appointed to the position upon the founding of the College in 1875[1]. Moreover, Maria is known to Dickinson scholars as one of Emily Dickinson's correspondents. Between 1877 and 1885 Dickinson penned a number of letters to her, of which seventeen have survived, at least in part[2]. Thus, a closer look at her life is of interest to a variety of scholars, from linguistic historians to Dickinson and women's studies scholars.

In 1880, Maria resigned her position at Smith College in order to travel to Leipzig, Germany, and pursue advanced training in Germanic philology. In this, she was following in the footsteps of her older brothers, Josiah and William, who had each studied for a few years at German universities (Seymour 1894:272–73), and especially of William, whose connections with German philologists would prove useful to her. Maria stayed for two years in Leipzig with short terms in Jena, although she had originally planned to go for one year only. This paper specifically details her experience there, utilizing correspondence between her and her family during this period.

My original purpose in looking at Maria Whitney's letters from this period was to seek out any connections between her and the Neogrammarians to find out what she wrote home to her brother, William Dwight Whitney, about this scholarly revolution. It began in 1878 with the publication of Hermann Osthoff and Karl Brugmann's introduction to their new journal, *Morphologische Untersuchungen*, which explained the basic tenets of the new movement. Very briefly, these were that language was not an organism, but a psycho-physical phenomenon, and that sound change proceeded according to exceptionless laws (Osthoff & Brugmann 1878:iii). Whereas

Maria had personal contact with a number of Neogrammarians as well as with some of their teachers, her remarks about them were primarily of a personal nature and did not reflect much on their theory. The few remarks she did make do not appear to have influenced her brother. However, I will outline her contact with these scholars because it shows the closeness of personal ties between William Dwight Whitney and his colleagues in Germany.

Yet what I found to be more interesting in reading her letters was the insight they give into one woman's struggles against gender discrimination and the impact it had on her life personally and professionally. Despite her accomplishments at Smith College and her family connections, Maria Whitney could not succeed as her brothers had done because she was a woman. This paper shows that her trip to Germany was ultimately a failure: she never taught in a college setting again, but settled into the more traditional female roles of child-care provider and girls' school teacher. Had she not gone to Germany, she probably would have fared better. Although this theme of women's frustration with the social circumstances of their sex in the late nineteenth century is quite familiar to us, a personal history like this helps to impart the emotional impact these common social circumstances had on individuals more readily. Her story deserves to be told.

1. MARIA WHITNEY'S TRIP TO GERMANY.

1.1. HER EXCLUSION FROM PUBLIC EDUCATION. By May of 1880, Maria had officially resigned her position at Smith College in order to travel to Germany for one year with the purpose of more thoroughly fitting herself to teach German (MW to James Whitney, 21 May 1880; MW to WDW, 30 December 1880). She intended to audit lectures at the University of Leipzig; however, she was the victim of bad timing and bad luck. Although women had been auditing lectures in small numbers at various German universities for nearly a decade, and at the University of Leipzig in particular since 1870, the Saxon Minister of Education, Von Gerber, officially decreed in late 1879 that women were to be admitted only by special permission of the Ministry. As a result, no new women were admitted for the next decade (Albisetti 1988:128). Thus, the fifty-year old Maria arrived in Leipzig only to discover that she would not be allowed to attend university lectures and courses. Adding insult to injury, women who had previously been admitted were allowed to continue (ibid. 129), so Maria's acquaintance, the young Eva Channing, 'fortunate girl', was permitted to attend lectures Maria was barred from because Eva had begun the previous year, just before the decree was made (MW to WDW, 14 November 1880).

With Maria's connections among the professoriate and her brother William's professional friends and acquaintances, she continued to hope from term to term that the Minister of Education could be persuaded to make an exception to the new decree in her case. Indeed, these professional friends, including Berthold Delbrück (1842-1922), Georg Curtius (1820–1885), Eduard Sievers (1850–1932) and Ernst Windisch (1844-1918), all told her that it should not be a problem for them to convince the Minister to permit her to hear university lectures (MW to WDW, 28 February 1881 and 10

June 1881, MW to Elizabeth Whitney, 18 October 1881, MW to WDW 29 December 1881). Yet all such requests were refused, and Maria was repeatedly disappointed over the course of the two years she stayed in Germany. Maria typically maintained an optimistic tone in her letters, rationalizing such disappointments. For example, she claimed she was grateful for the refusal of her request to hear Sievers's lectures in Jena, or else she would not have had private lessons with him, which were 'worth almost as much, perhaps more in some ways' (MW to Elizabeth Whitney, 18 October 1881). Yet in a rare moment of candidness, she revealed her true disappointment: 'I had even gotten to the point of believing that, on the grounds of being your sister, they could not refuse me!' (MW to WDW, 28 February 1881). She had erroneously believed that her private family connections would help open public doors for her.

As a result of Maria's public exclusion from higher education, she had to change her original plans. At various points during her stay, she contemplated going to Zurich, Berne or Basel, since women were admitted to Swiss universities, but ultimately, she chose to stay in Leipzig and take private lessons with a variety of teachers and university lecturers and to spend two short terms in Jena.

1.2. MARIA'S COURSE OF STUDY. Especially in letters addressed to her brother William, Maria detailed the Germanic philological education she managed to obtain from her private tutors. It was fairly canonical for the field at the time, with heavy emphasis on comparative Germanic philology, using old texts to learn various historical stages of Germanic languages. The languages she studied included modern German, Gothic, Old High German, Middle High German, and Icelandic, and the texts she read included the *Nibelungenlied*, Otfried (presumably his MHG *Evangelienbuch*), and the prose *Edda*, as well as the Grimms' *Deutsche Grammatik*, which she began studying with Sievers in Jena in 1881. Sievers was the most famous of her teachers, but I refer those who are interested in knowing exactly what she studied and with whom to **Table 1** (overleaf).

2. MARIA WHITNEY'S CHANGING SELF-CONCEPT. As indicated above, the most interesting aspect of Maria Whitney's letters home during her stay in Leipzig is the insight they give into the degree of gender discrimination she suffered. From a psychological standpoint, it is also fascinating to analyze how her self-worth depended to a certain extent on her success in the professional male world and was thus degraded over time by repeated negative experiences.

When she first entered the professional world as a teacher at Smith College, her self-esteem was at its highest. In an undated letter that must have been written when she first knew she was to work there around 1875, she wrote her brother William of her new-found work giving her a great sense of meaning and happiness. It is worth quoting at length because it is so emotionally authentic, and probably a feeling that many people, both men and women, can relate to even today:

Time	Letter Reference	Teacher/Place	Subject
Fall 1880	MW to WDW – 8 Sept. 1880	Frl. Schmidt/ Leipzig	Modern German
Late Fall 1880	MW to WDW – 14 Nov. 1880	Fräulein Röttger Carl Kant/ Leipzig	Modern German Gothic, MHG *Corinthians*
Spring 1881	MW to WDW – 4 May 1881	Carl Kant/ Leipzig	*Nibelungenlied* OHG
Early Fall 1881	MW to WDW – 1 Sept. 1881; MW to Elizabeth Whitney – 2 October 1881; MW to WDW – 6 Nov 1881	Eduard Sievers/ Jena	*Deutsche Grammatik* Comparative Germanic Grammar, tracing changes back from MHG
Late Fall 1881	MW to WDW 4 Aug, 1881, 29 Dec 1881	Von Bahder/ Leipzig	*Deutsche Grammatik* Otfried, MHG
Summer 1882	MW to WDW 11 June 1882, 9 July 1882, 29 July 1882	Eduard Sievers/ Jena	Icelandic Old Norse literature: Prose *Edda*

Table 1. *Summary of Maria Whitney's studies in Germany.*

I can't tell you how very happy and at rest I feel in the idea of having some definite aim and employment in life—I think I have never been so happy as now. I have dropped all the petty cares which have harassed me so much all my life through—and take untold satisfaction in the thought of throwing myself into the great current of activity that is to carry the world forward to better things I hope—I feel that I have worked up to a new interest in all that other people are doing—I read the papers with a totally different feeling, & feel that I have a personal interest in all the great plans and little plans which are stirring amongst men for the benefit of the race. You men I suppose could hardly understand such a change—or that one could live on sluggish as long as I did—now it seems so delightful to be a part—even so insignificant a part—of the grand machinery of the universe… (undated MW to WDW Folder XYZ Box 46)

Unfortunately for Maria, however, the reality of the professional world would not live up to this idealism. Her experience at Smith College ended badly and began a long process of painful disillusionment. When she decided she wanted to go to Germany to study in 1880, Maria had hoped to be able to take a one-year leave-of-absence without giving up her position entirely. But the President of Smith College, Laurenus

Clark Seelye (Ker Conway 2001:43), forced her to write a letter of resignation. He did the same with two other women. No complaint of service had been lodged against any of the three. In this way, Maria believed, he tried to keep the salaries of the women 'down to the ordinary school standard' (MW to WDW 4 August 1881).

Despite her letter of resignation, Maria held out hope that she would be allowed to return to Smith College when she returned (MW to WDW, 4 May 1881). Her disappointment with her professional experience there grew as it became evident that she really would not be allowed to resume her position. Although her hopes remained high in May, 1881, by August, she expressed doubt that she would 'ever set foot in Smith Col[lege] again', and lamented that she 'had no other plans or prospects' (MW to WDW, 4 August 1881).

The bitterness she initially felt towards the Smith College president began to transform into self-doubt, however, in the context of her exclusion from German university lectures. By December, 1881, she wrote that, although she would like to use her German skills, she would not want a position like the one she had at Smith College again, in part because she was too weak 'to undertake such absorbing duties' (MW to James Whitney, 29 December 1881), or so she rationalized to herself when it was clear she could not return.

Finally, in the spring of 1882 when she was setting her sights on returning to America, Maria claimed that she did not want to teach again because her confidence had diminished. Although her brother James had thought she would get another teaching position 'if the other sex isn't too spiteful', she wrote to her brother William that she did not expect to find 'any tempting opening… and I shall not take any pains to seek it. I think my confidence in my ability to teach satisfactorily does not grow with my years, but rather the contrary. I only wonder I was ever so bold or so courageous as to undertake it' (MW to WDW, 1 April 1882). It is possible that, as Maria's knowledge of her field grew in her private lessons in Germany, she realized just how much she did not know and therefore lost confidence. She did not trust Sievers's high praise of her as a student, for example, because she felt that he was comparing her to 'women of his acquaintance who probably are neither ambitious nor accustomed to work' (MW to WDW, 29 July 1882). But it is also possible that she shied away from the professional world at this point because of her two negative experiences as a woman trying to work within it, first with Smith's President Seelye, and second, with the inflexible Saxon Minister of Education, von Gerber. Indeed, in the same letter to William, in which she explained her forced resignation from Smith College (1 August 1881), she also lamented that she had been born a generation too early for her life as a woman to be 'useful' because the young women now had so many more opportunities.

This tension in Maria's life between finding useful, fulfilling work, but feeling unqualified and excluded from the male-centered professional world was ironically resolved by a family tragedy that gave her a sense of purpose, but in an accepted female role as the caregiver of her great niece. In May, 1882, Josiah Dwight Whitney's daughter, Eleanor, died in Ecoven, France, leaving a baby girl. The baby's grandmother, Josiah's wife Louisa, coincidentally died in Boston on the same day, leaving

a gap in female care (*Springfield Union*). Although the baby's father, Thomas Allen, survived his wife, the Whitney family, as expressed by Maria, felt that he could not possibly subject the child to 'the vicissitudes' of his 'nomadic life' (MW to WDW, 28 June 1882). Moreover, they wanted the child to grow up to be a 'Whitney baby' (MW to WDW, 11 June 1882). So Maria wrote to Thomas Allen requesting permission to take over the care of the baby with her brother, the baby's grandfather, Josiah, for a period of at least six months upon her return from Germany. She sailed on September 6, 1882 (MW to WDW, 14 August 1882)[4].

From Eleanor and Louisa's deaths in May, 1882, until Maria's return to America in October of that year, her focus was on securing the care of the baby rather than on her studies, as she wrote to William: 'I have not been able to study with the zest with which I began, before the sad events of the month of May broke me up'. But anticipation of this new occupation filled her with a sense of purpose and joy (MW to WDW, 29 July 1882), not unlike that sense of purpose and joy she expressed upon acquiring her position at Smith College.

Thus, Maria Whitney, the former Chair of Modern Languages of Smith College who had gone to Germany to fit herself more thoroughly to teach German, returned to be a nursemaid. Had she not gone to Germany at all, she probably would have been able to keep her position at Smith College. She never returned to teaching at the college level again, though she did teach at Brearley School, an elite private primary and secondary school for girls (Fishel 2000:3, 11), when it opened in 1884 through the fall term of 1885 (*Springfield Union*, Johnson & Ward 1958:862). But this position, too, marked a return to a traditional female role as an educator of young girls. It is quite likely that Maria, as an older woman who had not married or had her own children, truly delighted in this turn fate had given her. She did actively pursue the care of the child, and, in fact, she relinquished an opportunity to work on an English dictionary project with a Dr. Murray in England in order to take the child)[5]. Yet it is also possible that Maria's disappointment and disillusionment with the male-centered professional world spurred her enthusiasm for this traditional female task[6].

3. MARIA WHITNEY AND THE NEOGRAMMARIANS. In his dissertation, Stephen Alter (1994:594) maintains that Maria Whitney was present in the Curtius household and thus gave her brother William 'a unique perspective on the Neogrammarian revolt'. Georg Curtius, professor of classical philology at Leipzig, was one of the main teachers of the Neogrammarians and a personal friend of William. Alter goes on to quote Maria briefly from her letter to William of 29 December 1881, in which she showed the negative impact on Curtius's health of the 'defection of his best pupils' and expressed her own sympathy with the Neogrammarians, 'the progressive party which numbers such men as Sievers and Delbrück and Braune and Paul' (ibid. 594). It was Alter's presentation of these facts that led me to read Maria Whitney's letters from this period, and I had hoped to add more to the picture. However, having read all the letters from this period, I can add only that this was the one letter in which she overtly reflected on the Neogrammarian Revolution or any of the scholars who were part of it in an academic way.

Maria had contact with both Neogrammarians and their teachers, commenting on all of them at some point in her letters, but primarily in a personal manner. She was quite close to the Curtiuses, whom she first met in mid-November, 1880. She had frequent contact with them, including weekly English readings in the fall of 1881 (MW to WDW, 6 November 1881), though I do not believe she actually resided in their home[7]. She had 'strong personal regard' for Curtius (MW to WDW, 29 December 1881) and called both him and his wife 'unfailingly kind… from beginning to end' (MW to WDW, 1 April 1882). She also met William's former teacher, Albrecht Weber, who lived in Berlin, on a visit there in the fall of 1880 and later when he visited Jena in the summer of 1882, but felt that he and his family were 'not well-bred people' (MW to WDW, 4 August 1881).

Of the Neogrammarian generation, Maria's most important contact was with Eduard Sievers, with whom she studied Grimms' *Deutsche Grammatik*, Icelandic and the prose *Edda* over two short terms in private lessons. She liked him both personally and professionally, admiring the 'wide range of his learning and his skill in turning it to account' (MW to Elizabeth Whitney, 2 October 1881), as well as the 'desirable qualities of mind & character' united in him (MW to WDW, 6 November 1881). She also called upon the Delbrücks in Jena in the summer of 1881, liking Berthold Delbrück best of all William's acquaintances in Germany (MW to WDW, 14 August 1882). Other scholars she met at least once included Lipsius (MW to WDW, 29 December 1881), Böthlingk and Windisch (MW to WDW, 19 April 1882). With the exception of Sievers, however, all of these contacts were merely social[8].

The most interesting insight to be gained about William Dwight Whitney and the Neogrammarians from personal correspondence during this period, however, is that the remarks about them which he received directly from his German professional contacts differed markedly from his sister Maria's. As we have seen, Maria was sympathetic to the movement; William's colleagues, however, were more critical. Whereas Curtius believed the new theory was a personal affront, Maria doubted this, as she remarked to her brother, 'I wonder it does not occur to [Curtius] that as the new direction—or ideas—are represented/embraced by the brightest men of the younger generation, there may be something more at the bottom than a desire to combat him and his position' (MW to WDW, 29 December 1881). Curtius, for his part, did finally write to Whitney about the conflict himself in December of 1882. His health had at last improved to the point that he hoped to write an article in which he would present his criticism of the Neogrammarians' position, in particular pointing out what he felt were irreconcilable contradictions in their theory (GC to WDW, 20 December 1882). He fulfilled this hope in 1885 with a publication entitled *Zur Kritik der neuesten Sprachforschung* (cf. Curtius 1977).

William Dwight Whitney's former teacher in Berlin, Albrecht Weber, bore no great affection for the new movement, either. Weber sent Willam a copy of the second volume of Osthoff and Brugmann's *Morphologische Untersuchungen* in 1880, commenting: 'Ich kann dieser Art von Arbeiten keinen grossen Geschmack abgewinnen' (AW to WDW, 22 February 1880). It is important to note here that Weber was thus keeping

Whitney apprised of the developments in the field in Germany and, at the same time, was indicating the critical stance with which Whitney should receive them.

Not too surprisingly, Whitney ultimately sided with his teacher and colleague, Weber and Curtius, rather than with his sister. In two statements made at meetings of the American Philological Association in 1885 and 1886, he emphasized that the 'neo-grammatical movement' did not present much that was truly original and that the doctrine of the exceptionlessness of sound laws could not be proven. He also criticized the disregard their mechanical theory of sound change showed for the role of the human will in sound change[9]. Thus, like Curtius, he believed that the revolution was more rhetoric than substance, more personal attack than true theoretical discontinuity. We can conclude that Maria's comments on the Neogrammarian movement did not influence her brother, William, in any substantial way. If anything, her presence in Leipzig *may* have caused him to delay his public criticism of the movement until 1885, so that Maria would not be placed in an awkward circumstance with her tutor, Sievers, but this is mere speculation.

4. SUMMARY. Did Maria Whitney's closeness to the Curtiuses cause her brother William to criticize the Neogrammarian movement more than he otherwise would have? Or conversely, did Maria's gratitude to Sievers, who refused to accept payment for the lessons he gave her (MW to WDW, 6 November 1881), keep William's often scathingly critical tongue in check in the case of the Neogrammarians? Although it is fun to speculate about personal relationships and the role they must certainly play in determining scholarly stances, it must, in this case, remain speculation, because we lack more direct evidence. Her trip does, however, provide evidence that William had numerous and close ties with his German colleagues of both the older and younger generation of philologists.

The story of Maria Whitney's trip to Germany is, nevertheless, worth telling for the insight it gives us into the personal impact of gender discrimination. Despite the advantages of her family connections, Maria Whitney could not achieve what she wanted to in Germany because she was barred from lectures, and in her life because she was mistreated by the Smith College president. We are left to wonder, especially given the great accomplishments of her brothers, what she might have achieved if, as she wished herself, she had been born a generation or two later.

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[1] There is some discrepancy about the dates of her service at Smith College. In the *Springfield Union*, she is described as one of the first instructors from 1875, but it is claimed that she retired after two years. It is clear from her letters, however, that she was appointed in 1875, began teaching in 1876, and resigned in the spring of 1880 (e.g. MW to James, 21 May 1880).

[2] Maria was related to Mrs. Samuel Bowles through the Dwights. The Bowles were very close to the Dickinsons, so Maria met Emily through them (Johnson & Ward 1958:957).

[3] Eva Channing had met William Dwight Whitney when he was in Leipzig with his family in 1879. She was pursuing philological studies there, especially in Sanskrit, Greek and Ger-

man, although she could not take a degree as a woman. She wrote to William in August, 1880, requesting his advice about her continuing studies, feeling disadvantaged as a woman and wondering whether she had any chance of getting a professorship in Sanskrit or whether she should concentrate her efforts elsewhere (EC to WDW, 4 August 1880). She and her mother socialized with Maria during her stay in Leipzig, but Maria preferred the mother, finding that Eva lacked tact (MW to WDW, 4 August 1881). Unlike Maria Whitney, Channing did have some small success professionally after studying in Germany. Under William Whitney's sponsorship, she was the first female member elected to the American Oriental Society and to the American Philological Association, and she wrote an important translation and later a review of Delbrück's *Introduction to the Study of Language* (Alter 2005, personal communication).

4   Incidentally, this event helps to make more sense of one of Emily Dickinson's letters to Maria, letter 824, dated May, 1883. In this letter Emily Dickinson remarks that she can well understand Maria's 'fondness for the little life so mysteriously committed' to her care. The editors of Dickinson's letters explain this reference by pointing out Maria Whitney's special interest in the Children's Aid Society, one of the few publicly recorded facts of her life mentioned in the *Springfield Union* article (April 10, 1904) about her family. But the child in question, especially given the date of May, 1883, is clearly Eleanor's child (Johnson *&* Ward 777, *Springfield Union*).

5   Maria describes the project to William as 'this great English dictionary, of wh[ich] you doubtless know, wh[ich] is to be published under the auspices of the Philological Ass[ociation]' (MW to WDW, 29 July 1882). Undoubtedly, she meant the Philological Society, under the auspices of which the Oxford English Dictionary under the editorship of James A.H. Murray with the original title of the *New English Dictionary* was begun at this time (http://www.oed.com/about/history.html).

6   Another letter from Emily Dickinson hints that this may have been the case when she upbraids Maria in the summer of 1883 for speaking of 'disillusion' in her previous letter: 'You speak of "disillusion"... That is one of the few subjects on which I am an infidel. Life is so strong a vision, not one of it shall fail' (Johnson *&* Ward 1958:784, letter 860).

7   The question of Maria residing at the Curtiuses is a difficult one because she wrote to William in February of 1882 that she was ready to leave Leipzig, but doubted that she would find 'any so pleasant a home elsewhere as I have at the Curtiuses' (MW to WDW, 5 February 1882). It is unclear whether, at this point, she actually resided with them, or whether she meant 'home' more figuratively, as a place she felt at home on her frequent visits. It is clear, however, that she did not live with them for most of her stay in Leipzig. Upon her arrival in the fall of 1880, she lived at a girls' school and taught English lessons (MW to James Whitney, 26 September 1880). Then she moved into the apartment of Edward W. Hopkins, one of William's former students, who had been completing his degree at Leipzig, when he moved out in February of 1881 (MW to WDW, 28 February 1881).

8   One point of possible interest to linguistic historians is a comment Maria made regarding a professional decision of Sievers's. Apparently, President Elliot of Harvard had offered Sievers a position, but Delbrück was influential in Sievers's decision not to go, as he was too much of a specialist for the Harvard position and would be able to do more for his field in Germany, where he could work with Paul and Braune, than at Harvard (MW to WDW 6 November 1881).

9   The two statements were 'Remarks [on F. March's Paper on the Neogrammarians]' *Proceedings of the American Philological Association* 16 (1885): xxi; and 'The Method of Phonetic Change in Language' *Proceedings of the American Philological Association* 16 (1886): xxxiii–xxxv. For a more thorough discussion of Whitney's relationship to the Neogrammarians, see Sutcliffe 2001, 228–39.

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A DIACHRONIC PERSPECTIVE ON CONCESSIVE CONSTRUCTIONS WITH *JUST BECAUSE*

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THIS PAPER EXPLORES the grammaticization of the English phrase *just because* into a concessive connector, which a corpus analysis shows is a recent development. The construction is unusual, because causality is not usually recognized as a source for concessivity (Heine & Kuteva 2002:329). English concessive connectors have been observed to develop out of conditional connectors (König 1986) or markers of co-temporality (Traugott & König 1991), as exemplified in (1) and (2) respectively:

(1)   This is an interesting, if complicated, solution.
(2)   While he is very talented, he needs a lot more practice.

Concessivity in this study is defined as the juxtaposition of two propositions that the speaker judges as incongruent. In (1), the speaker concedes that a particular solution is complicated, but points to the fact that it is still interesting. The speaker of (2) concedes that someone has talent, but makes clear that talent alone does not suffice. Concessivity is a more complex notion than just contrast, because the incongruence of the propositions in a concessive construction is usually unexpected (cf. Trask 1993:54).

While prior analyses (Hirose 1991, Bender & Kathol to appear) have investigated the semantic and syntactic properties of *just because* from a synchronic perspective, the present study assumes a diachronic perspective. The study adopts a usage-based approach (Barlow & Kemmer 1999, Bybee & Hopper 2001) that acknowledges the importance of frequency in the development of grammatical constructions. Examples of concessive usages of *just because* appear in (3)–(5):

(3)   Just because you play guitars it doesn't mean you've got soul.
(4)   Just because the data satisfy expectations does not mean they're correct.
(5)   You can't leave your parents just because you want to.

The examples above mean roughly the following:

(3)'   Although you play guitars, that does not mean you've got soul.
(4)'   Although the data satisfy expectations, they need not be correct.
(5)'   You can't leave your parents, although you might want to.

Whereas *just because* in the above examples has concessive meaning, this is not always the case. (6) illustrates a causal usage of *just because*.

(6)   Utopias lead to disappointment just because they are utopias.

This study investigates the relative frequencies of construction types with *just because* over the past 350 years. A basic finding is that concessive usages of *just because*, as in (3) and (4), gain in relative frequency only after 1950.

The outline of the paper is as follows: section one describes the database used for this study. Four corpora are combined into a 650 million word database, which is grouped into four diachronic periods. Section two summarizes prior work on the semantics of *just because* (Bender & Kathol, to appear), which involves the denial of an invalid inference. Section three outlines different construction types that are found with *just because*. Concessive *just because* is shown to occur most frequently in sentence-initial position. Section five tracks the diachronic development of different constructions with *just because* over the past 350 years. The first concessive usages occur around 1850 in sentences where a negative matrix clause is followed by *just because*.

1. DATABASE AND METHODOLOGY. The database consists of 2043 instances of *just because*, taken from four corpora which cover partially overlapping time spans.

Of the examples, 1038 are from the written component of the British National Corpus (Leech 1993). The texts in the BNC consist of about 75% informative and 25% imaginative prose; all examples are post-1960, ranging up to newspaper texts dated 1993. The corpus that spans the longest period is the Literature On-line resource (LION), which is made up of 350,000 works of English prose, poetry and drama from the 12th century to the year 2000 (ProQuest Information & Learning Company 1996-2004). The LION corpus contains 641 instances of *just because*.

Another on-line resource, the Modern English Text Collection at the University of Michigan (METC), contains poetry and prose from the 19th and 20th century (University of Michigan 2004). The works do not overlap with those of the LION resource. METC contains 84 instances of *just because*.

Finally, the London Times Digital Archive (TIMES) provides electronically searchable text (Thomson Gale 2004). The 'Feature' subset in the time from 1900–50 contains 279 instances of *just because*.

Table 1 gives an overview of the sizes, genres and covered time spans of the corpora. The sizes of LION, METC and TIMES are calculated on the basis of the absolute frequencies of twenty high-frequent function words such as *and*, *of*, *the*, *to*, and others.

It is assumed that these texts are broadly comparable in style and genre. However, the corpora will not be compared against each other. To track down the development of *just because*, each example was assigned the year of its usage and the complete database was divided into four periods. **Table 2** shows this organization of the examples.

The table shows the distribution to be uneven in two respects. First, the subcorpora are not of the same size, and there are many more examples for the latest period

	BNC-written	LION	METC	TIMES
Words	90 million	420 million	22 million	121 million
Examples	1038	641	84	279
Period	post-1960	1100–2000	1800–2000	1900–1950
Genres	informative prose imaginative prose	prose, poetry drama	imaginative prose	informative prose

Table 1. *The corpora.*

	1651–1850	1850–1900	1900–1950	1950–2000
BNC	—	—	—	1038
LION	90	364	55	132
METC	—	44	29	11
TIMES	—	—	279	—
Total	90	408	363	1181

Table 2. *Four periods.*

than for the first. Second, the corpora are not equally represented in the four periods. BNC and TIMES each cover only one period.

The database is analyzed in the following way. Each example is categorized into one of twelve construction types. The semantics of each construction types are described and the relative frequencies of the construction types are tracked over the four periods.

2. THE SEMANTICS OF *JUST BECAUSE*. Examples like (3) have been shown to serve the discourse function of *inference denial* (Hirose 1991, Bender & Kathol to appear). Sentences of the form *just because X it does not mean Y* state that Y is not a valid inference from the fact X. This relates *just because* to a distinction made by Jespersen (1940, vol. 5:399), who distinguishes uses of *because* that point out a causal relationship, and uses of because that describe an inference from effect to cause. Consider (7) and (8).

(7)   Mary loves John because he typed her thesis.
(8)   John loves Mary because he typed her thesis.

Whereas (7) states that John's typing caused Mary to love him, nothing analogous can be said of (8). Here *John loves Mary* is an inference that is drawn from the observation *he typed her thesis*. Note that this inference can be cancelled by way of *just because*. This can be seen as evidence that the *because* in *just because* instantiates Jespersen's *inferential because*:

(7)'   Just because John typed Mary's thesis doesn't mean he loves her.

Verb	Tokens	Percentage
mean	182	63.86%
make	14	4.91%
assume	8	2.81%
follow (logically)	4	1.40%
give somebody the right to do sth	4	1.40%
think	4	1.40%
be a reason	4	1.40%
be	3	1.05%
expect	2	0.70%
have to	2	0.70%
imagine	2	0.70%
stop	2	0.70%

Table 3. *Matrix clause verbs of* just because… not VERB.

Collocational evidence confirms that concessive *just because* typically is about inference denial. A concordance of all examples with sentence-initial *just because* with a negative matrix clause brings to light that most verbs in these matrix clauses are semantically related to inferencing. **Table 3** lists the main verbs in the database that occur in all strings of the form *just because… not VERB*.

First of all, **Table 3** shows the high entrenchment of the formula *just because X (it) doesn't mean Y*, which accounts for about 64% of the data. Bender and Kathol (to appear) report 85% for *mean* and 6% for *make* in their study. The verbs in italics, which all relate to inferencing, augment the percentage of inferencing verbs in the present study to 72.3%. The figures show that the construction is most frequently used to cancel out a possible but invalid inference.

This empirically corroborates conclusions drawn by Hirose (1991:16) and Bender and Kathol (to appear). However, there are instances of the *just because* construction that do not seem to convey the sense of inference denial.

(9)   Just because I happen to be the CEO I don't play the Great White Chief.
(10)   Just because you're cutting down on time, you don't have to cut down on performance.
(11)   Courts should not exclude evidence just because it is not accepted wisdom.
(12)   Wouldn't it be helpful to have a bank that wasn't shut just because it's closed?

(12) stems from an advertisement for on-line banking. As far as their general semantics, it is probably inaccurate to restrict these sentences to the meaning of inference denial. Compare (9) to (4), repeated here for convenience.

(4)   Just because the data satisfy expectations does not mean they're correct.

Whereas the correctness of the data is a straight-forward inference from their expectedness, *playing the Great White Chief* is a more peripheral component in the concept of a CEO. Despite this peripherality, (9) makes sense because bossy behavior can easily be construed as a property of a CEO. Examples like (9) and (10), which involve propositions that are less clearly related than the ones in (4), provide evidence that the meaning of *just because* generalizes from inference denial to concessivity.

Examples like (11) and (12) deviate not only semantically but also formally from the more frequent types. Here, *just because* occupies a sentence-medial position.

Bender and Kathol (to appear) suggest several semantic subtypes of the general theme of inference denial. Besides predicates of *inference*, they attest predicates of *evidence*, *justification* and *making* besides some residual cases. While their discussion is cogent at all times, the data in this study are suggestive of generalization rather than specification into coherent subtypes.

3. SYNTACTIC ENVIRONMENTS OF *JUST BECAUSE*. The phrase *just because* occurs in a number of syntactic environments which are associated with different semantic functions. **Table 4** (overleaf) presents twelve construction types that can be extrapolated from the data. This study conceives of grammatical constructions in the sense intended by Goldberg (1995). Constructions are viewed as form-meaning pairs such that some aspect of either meaning or form is not predictable from its component parts.

A broad distinction can be drawn between sentence-initial *just because* (types 1–7) and sentence-medial *just because* (8–13).Concessive meaning correlates with sentence-initial *just because*. Most construction types with sentence-initial *just because* code concessive meaning. However, consider type 5, in which the matrix clause is positive. Here the reading is causal. Likewise, the exclamative construction in type 7 does not always convey concessive meaning.

Conversely, most construction types with sentence-medial just because allow only a causal interpretation. However, type 8 comprises both causal and concessive examples.

3.1. TYPE 1: *JUST BECAUSE X IT DOESN'T MEAN Y*. For several reasons types 1 and 2 are of particular interest. First, they instantiate the central discourse function of inference denial. Second, they show that a negated form of the verb *mean* is by far the most frequent collocate of *just because*. The formulaic gloss *doesn't mean* is meant to include plural and past forms, as well as non-contracted forms, throughout this paper.

3.2. TYPE 2: *JUST BECAUSE X DOESN'T MEAN Y*. While types 1 and 2 are identical in meaning, type 2 drops the dummy subject *it* of the matrix clause, which gives it a different syntactic structure. Instead of two coordinated clauses, there is now just one matrix clause with a sentential subject. Today, type 2 outranks type 1 in terms of frequency.

3.3. TYPE 3: *JUST BECAUSE X NEG-CLAUSE*. Most examples of this construction type have the meaning of inference denial, but some are better characterized as being mere concessives. The negative matrix clauses of type 3 contain a diverse set of verbs. The

	Structure	Example	Tokens
1	Just because X it doesn't mean Y.	Just because you play guitars it doesn't mean you've got soul.	62
2	Just because X doesn't mean Y.	Just because data satisfy expectations does not mean that they are correct.	120
3	Just because X NEG-CLAUSE.	Just because you donate an egg, that does not make you a parent.	82
4	Just because X NEG-VP.	Just because it's a Number One doesn't make it a better record.	21
5	Just because X POS-CLAUSE.	'Just because he won a few stupid car races', she went on, 'he seems to think he rules the world!'	192
6	Just because X POS-VP.	Just because he's got a black belt means nothing.	2
7	Just because X!	Just because she's never had a proper job.	95
8	NEG-CLAUSE just because X.	You cannot leave your parents just because you want to.	356
9	POS-CLAUSE just because X.	Utopias lead to disappointment just because they are utopias.	937
10	POS-CLAUSE not just because X.	'We had a very good season', Walsh reflects, 'not just because we've won something, but because you learn in the process'.	75
11	POS-CLAUSE just because of X.	A total of 37 in every 100 women believe that bankers treat them differently just because of their sex.	42
12	POS-CLAUSE not just because of X.	Clients were also causing headaches, and not just because of fees.	34

Table 4. *Syntactic environments of* just because.

81 examples in the data occur with 48 different verbs. The top collocates are *assume* (7), *make* (5), *follow* (4), and *think* (4). While three of these are semantically related to inferencing, the diversity in this type provides evidence for the generalization of *just because* into a concessive marker.

3.4. TYPE 4: *JUST BECAUSE X NEG-VP*. Much like type 2, this type integrates a subject clause into the matrix clause. The type is quite infrequent. Again, the verb *make* shows up, this time as the top collocate. Nine examples out of the total 21 are of the form *just because X doesn't make Y Z*. Another three are of the form *just because X doesn't give Y the right to Z*. So contrary to type 3, usages of type 4 center around a few central collocates.

3.5. TYPE 5: *JUST BECAUSE X POS-CLAUSE*. Type 5 is the only construction with sentence-initial *just because* that does not normally allow for a concessive interpretation. An interesting if infrequent exception of this type is found with matrix clauses that are questions. These are interpreted as rhetorical questions. In (13), *just because* indicates that a given cause to do something is less well-founded than it should be.

(13)   Just because the SAS drive everywhere, must we always copy them?

3.6. TYPE 6: *JUST BECAUSE X POS-VP*. This type is highly infrequent and could in fact be regarded as a systematic gap in the paradigm of possible constructions with *just because*. The only two examples in the whole database are given below. Note that in both cases, even though it is formally positive, the meaning of the VP is essentially negative.

(14)   But just because I didn't learn to sail as a kid seemed a poor reason for not having a go now.
(15)   Just because you had the good fortune to pay nothing for your very expensive university education does little to justify a system of higher education which, at the same time, excludes 85 per cent of your age group from the privileged position you evidently enjoyed.

3.7. TYPE 7: *JUST BECAUSE X!* Type 7 is a heterogeneous category, because it contains exclamatives (16), cut-off sentences (17), and answers to questions (18) that look alike formally. While all exclamatives in the database have causal meaning, it is possible to construct concessive examples such as (19).

(16)   Nutty fetched the cloth and mopped up the table. 'It's not fair. Just because it's me—'
(17)   Sally felt that it was useless to tell why, and so said—Oh! just because—
(18)   And why? Just because she was playing with a feather she found on the floor.
(19)   Just because he's got a black belt!

3.8. TYPE 8 *NEG-CLAUSE JUST BECAUSE X*. Type 8 comes in two semantic variants. See example (20) and the analogously constructed example (21). Whereas (20) is concessive, (21) has only a causal interpretation.

(20)   You cannot leave your parents just because you want to.
(21)   You cannot leave your parents just because you are only five years old.

The contrast arises through a difference in negation scope. In (20), the negator scope ranges over matrix clause and subordinate clause. In (21), the negator has only the matrix clause within its scope. The subordinate clause gives a reason why the matrix clause is negated. In other words, (20) conveys '*That's not a good reason!*' whereas (21) conveys '*That's why!*'

(20)'   ¬[You can leave your parents just because you want to.]
         That's not a good reason!
(21)'   ¬ [You can leave your parents] just because you are only five years old.
         That's why!

3.9. TYPE 9: *POS-CLAUSE JUST BECAUSE X*. Type 9 always expresses a causal relation between matrix clause and subordinate clause. There are no examples in the data that convey concessive meaning.

3.10. TYPE 10: *POS-CLAUSE NOT JUST BECAUSE X*. This type is isomorphic to type 9 with the difference that *just because* is preceded by *not*. However, much like type 8, where *just because* is in the scope of a negator, this construction type is used to downplay the validity of an invoked reason. Often a more important reason is given later in the sentence in a subordinate clause with *but*, as in (22)

(22)   I think she's glad to see me, not just because I give her food, but because she's lonely.

3.11. TYPE 11: *POS-CLAUSE JUST BECAUSE OF X*. Even this type is similar to type 9, except for the fact that *just because* is followed by *of*. Like type 9, the construction is used to convey a causal relation between two clauses.

3.12. TYPE 12: *POS-CLAUSE NOT JUST BECAUSE OF X*. Analogous to types 8 and 10, the negated counterpart to type 11 expresses that some causal relation does not hold between two propositions. As in type 10, examples with an ensuing subordinate clause with *but* are very frequent.

   Taking these constructions as a starting point, we can now assess their development in terms of relative frequency.

4. THE HISTORY OF *JUST BECAUSE*. **Figure 1** shows how the relative frequencies of the twelve construction types developed from the earliest examples in 1651 to the year 2000. Before we address the most decisive construction types in turn, it should be noted that sentence-initial *just because* is substantially less frequent than sentence-medial *just because*. However, it has gained momentum. From 11% in period I, it has reached 35% in period IV.

4.1. *JUST BECAUSE X (IT) DOESN'T MEAN Y*. The most recent development is the one of types 1 and 2. These types appear only after 1950, occupying 5% and 10% respectively. The variant without the subject pronoun thus clearly outranks its companion.

4.2. *JUST BECAUSE X NEG-CLAUSE*. This type has steadily increased in frequency, going from 2.4% to 5.2%. This tendency turns into a success story if one considers types 1, 2 and 4 subtypes or derivatives of it. But even the development as is achieves a
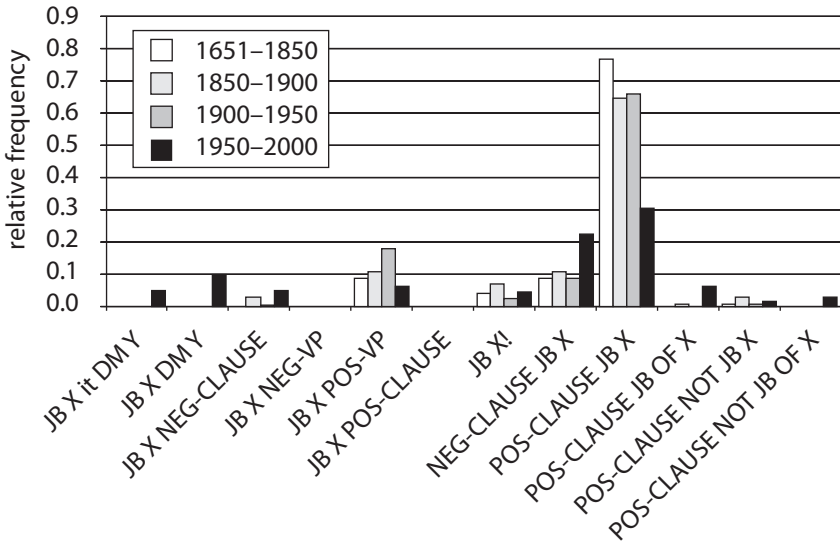
Figure 1. *Construction Types with* just because.

chi-square value of p < 0.01. Some of the oldest concessive usages of *just because* are found in this category. Example (23) is from 1854.

(23)   Just because I said you were the prettiest girl in town, and the wittiest—that's not flattery.

4.3 *JUST BECAUSE X NEG-VP*. Along with types 1 and 2, type 4 only occurs in period IV. Even then, it is very infrequent at 1.8%. The top collocates *make* and *give somebody the right* suggest that this type has a more general concessive function than mere inference denial.

4.4. *JUST BECAUSE X POS-CLAUSE*. The development of type 5 in terms of frequency is startling. We observe a rise over periods one to three, followed by a sharp decline to period four. Chi-square judges the distribution to be significant (p<0.01). A first approximation to this phenomenon is the analysis of top collocating verbs in the matrix clause.

   Table 5 (overleaf) shows that while ordinary predications with *be* remain constant, the fourth period shows an increase of epistemic verbs. Besides *think*, which gains about 9%, *assume* and *know* enter the scene. These examples have matrix clauses that are formally positive, but carry negative meaning. Their discourse function is to denounce a given cause to do something as wrong, as in (24).

1651-1950				1950-2000			
be	36.84%	hear	1.75%	be	32.88%	know	2.74%
give	3.51%	run	1.75%	think	12.33%	arise	1.37%
think	3.51%	speak	1.75%	become	8.22%	ask	1.37%
call	1.75%			assume	2.74%		

Table 5. *Collocating verbs of type 5.*

	1850-1900	1900-1950	1950-2000
That's not a good reason!	27 (58.7%)	23 (74.2%)	257 (95.9%)
That's why!	19 (41.3%)	8 (25.8%)	11 (4.1%)

Table 6. *That's not a good reason! vs. That's why!*

(24)   Just because she owns the house I'm living in, she thinks she can patronize
         me.

4.5. *JUST BECAUSE X!* Type 7 is semantically too heterogeneous a category to show any
coherent development. Even though there appear to be fluctuations in the relative
frequency, the distribution over the four periods is not significant (p > 0.05).

4.6. *NEG-CLAUSE JUST BECAUSE X*. In the distribution of type 8 we observe a rise from
period one to period four. Period three does not follow this trend, but since it stays
on the same level as period two, it does not disrupt the trend either. The distribution
is significant (p < 0.01). The relative frequency starts out with 7.5% in period one and
goes up to 24% in period four.
    In section 3.8 it was argued for the distinction of two semantic subtypes, one being
causal, and the other the rebuttal of a possible reason. **Table 6** shows the distribution
of these two meaning types over periods two to four.
    The development indicates that the second meaning is becoming rarer and rarer,
relative to the first one. In the fourth date period, '*That's not a good reason!*' provides
96% of all examples. This suggests that construction type 8 is no longer just ambigu-
ous, but that the construction as such is associated with the discourse function of
discrediting something as an insufficient reason. Chi-square judges this distribution
to be significant (p < 0.01).

4.7 *POS-CLAUSE JUST BECAUSE X*. In all four periods, this type is the most frequent one.
However, whereas the percentage exceeds 64% over the first three periods, we see it
drop below 30% in the fourth period.
    On the initial hypothesis that *just because* grammaticizes into a concessive marker,
we would even expect constructions that cannot conform to this shift in meaning to
disappear gradually. For two reasons the decline of this construction type cannot be
easily dismissed as a sampling effect of the corpus. First, the subcorpora partially cut

across the periods and should thus balance sampling effects to a certain degree. Second, we observe regularities in development over the four periods in types 3, 5, 7, and 8. These regularities suggest that the database is not too subject to sampling error. To discredit the development in type 9 as accidental would entail that these regularities be artifactual as well. So whereas types 3, 5, and 8 undergo internal changes in meaning or collocation, type 9 stays the same, at the cost of a decline.

5. CONCLUSIONS. Diachronic corpus analysis suggests that *just because* currently grammaticizes into a concessiver marker by way of the discourse function of inference denial. Construction types that code concessive meaning gain in relative frequency, while in ambiguous construction types the concessive variant wins out over the causal variant. The most frequent causal construction type remained very frequent until 1950, only to decline to half of its relative frequency after that. These shifts over short periods of time suggest that the pace of grammaticization can be fairly rapid. New grammatical constructions may evolve over the course of a generation or two.

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II

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INTERCONNECTIONS
WITHIN
LANGUAGE

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FINITENESS, CASE AND AGREEMENT

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THE CORE THEORETICAL CLAIM[1] questioned in this paper is the exclusively [+tense] oriented theory of Nominative case analysis that parametrizes languages according to the feature on T, i.e.[+tense] or [+phi features/Agreement] (Chomsky 1981, 2001; George & Kornfilt 1981, Raposo 1987, among others). The core data to be analyzed is Turkish inflected embedded clauses with agreement (1)a and with optional agreement (1)b: Nominative-Subject Complement Clause (Declarative) in (1)a and Accusative-Subject Complement Clause (Declarative) in (1)b. Accusative-Subject clauses are also referred to as Exceptionally Case marked Clauses (ECM):

(1) a. *Ben-Ø* [*sen-Ø*   *gel-di-n*]   *san-dı-m.*
        I-NOM you-NOM come-PERF/PAST-3SG   think-*PERF/PAST-1SG*
        'I thought you came/have come'
     b. *Ben-Ø* [*sen-i*   *gel-di-(n)*]   *san-dı-m.*
        I-NOM you-ACC come-PERF/PAST-(3SG)   think-PERF/PAST-1SG
        'I thought you came/have come'

The predicates of both (1)a and b look identical in terms of 'tense' and subject-verb agreement. If either tense or agreement were responsible for the case of the subject of the subordinate verb *gel* 'come' found in these clauses, we would expect the same subject-case in both clauses. If we accept that Nominative subject corresponds to the presence of agreement, then we cannot account for the obligatory Accusative case in (1)b.

Since Chomsky (1981) and George and Kornfilt (1981), languages have been classified into two groups according the kind of inflectional ingredient that correlates with the presence of Nominative subject in clauses: English type languages in which the presence of Tense is required for Nominative subjects; European Portuguese type languages in which Agreement is required for Nominative subjects. Turkish has been argued to be a language like European Portuguese (Raposo 1987) in which it is not tense but agreement that defines finiteness (George & Kornfilt 1981), and correlates with the presence of nominative case. I suggest that in Turkic languages and possibly in Romance Inflected Infinitives, what correlates with Nominative Case is not Agreement *per se*, as claimed (Kornfilt 1984, 2002, 2003), but a complex system consisting of mood in the Complementizer system and epistemic modality in the Inflection/Tense system. The prediction of the proposed analysis is the *ECM Hypothesis*: lack of either one or both components of nominative case renders the structure non-finite, and yields an Accusative-subject or Genitive-subject clause. Non-nominative subject

case, i.e. Accusative or Genitive, cannot co-occur with mood and epistemic modality. This prediction is attested in English, European Portuguese, Catalan, and Greek, among others.

The major theoretical implication of this study is un-coupling case and agreement. The Minimalist stance (Chomsky 1995, 2001) requires a one-to-one correspondence between case and agreement. Nominative case corresponds to the presence of tense in the clause. The Tense head within the syntactic tree must also bear abstract agreement features which in English have no morphological manifestation except for the 3rd person singular in the present tense. In languages with overt and rich agreement morphology, such as European Portuguese and Turkish, Agreement is a functional head in syntax, just like Tense. If the agreement morphology comes from a verbal paradigm, the subject exhibits Nominative case; if it comes from a nominal paradigm, the subject has Genitive case. I suggest that we can account for both types of languages with a uniform analysis: Nominative case is dependent on the presence of Mood marked with Agreement morphology and Epistemic Modality marked with either Tense morphology (English) or epistemic modal morphology (Turkish). For *mood*, I adopt a definition where it refers to a feature on the head of the clause, i.e. CP, distinguishing the clauses in terms of the *attitude* someone has toward what it expresses (Portner 1999). For epistemic modality, I adopt a definition (Lyons 1977) where *Possibility* is defined in terms of truth in some possible world ($\exists$x). As such, tense is a type of epistemic modality.

Section 2 discusses the morpho-syntactic ingredients of nominative case; Section 3 the syntactic mechanism of nominative-case licensing; Section 4 extends this analysis to English subjunctives; Section 5 presents the ECM hypothesis and the languages where it is attested, and Section 6 concludes the paper.

1. GRAMMATICAL COMPONENTS OF NOMINATIVE CASE. In this section, I argue that nominative case requires the presence of certain syntactic features in the Inflection and the Complementizer system within the clausal architecture. In the Minimalist framework, a clause consists of a series of functional categories: Complementizer Phrase (CP), Tense Phrase (TP) formerly called and Inflection Phrase (IP), and *v*erb Phrase (separate from the lexical Verb Phrase). I propose that the IP bears an epistemic modality feature rather than tense *per se*, and the CP bears a mood feature.

1.1. THE FIRST PIECE OF THE PUZZLE: EPISTEMIC MODALITY/TENSE DOMAIN. Consider the Nominative / Accusative Alternation in (1). These Turkish Clauses are minimally different in terms of subject case yet otherwise identical in terms of the morphological form of the predicate. The availability of epistemic modal features in the I/T system in Turkish enables the epistemic modal reading in Nominative-subject construction (2) but *not* in Accusative subject constructions (3)

(2)   *Ben-Ø*   [*Kürşat-Ø*   *gel-**ebilir**-Ø*]   *san-dı-m.*
        I-NOM   Kürşat-NOM   come-**mod**-3SG   think-PERF/PAST-1SG

    i. 'I thought Kürşat could (=might) come'   ✓ *Epistemic*
   ii. 'I thought Kürşat could (= was able to) come'   ✓ *Deontic*

As remarked above, an epistemic modal reading is not allowed in Accusative-subject complements, as observed in (3). The only available reading is a non-epistemic one:

(3)   * *Ben-Ø* [*Kürşat-ı*   *gel-**ebilir**-Ø*]   *san-dı-m.*
      I-NOM Kürşat-ACC come-**mod**-3SG think-PERF/PAST-1SG
     i. *'I thought Kürşat could (=might) come'   * *Epistemic*
    ii. 'I thought Kürşat could (= was able to) come'   ✓ *Deontic*

Similar observations may be made in other Turkic languages, e.g. Tuvan and Kazakh. In Tuvan, an ECM construction allows deontic modality (4)a and does not allow epistemic modality (4)b; whereas, Nom-Subj construction allows either one (4)c:

(4)   a. *Amur* [*eçen-**ni***   *kel-ir*   *ujurlug*] *dep*   *podaan.*
       Amur Çeçen-ACC come-AOR deontic postp. thought
       'Amur thought Çeçen had to/was able to come'   ✓ *Deontic*
    b. *Amur [*eçen-**ni***   *kel-ir*   *çadavas*] *dep*   *podaan.*
       Amur Çeçen-ACC come-AOR epistemic postp. thought
       Intended: 'Amur thought that Çeçen was bound to/ might come.' * *Epistemic*
    c. *Amur* [*Çeçen*   *kel-ir*   *ujurlug/çadavas*] *dep*   *podaan.*
       Amur Çeçen-NOM come-AOR deon/epistemic postp. thought
      i. Amur thought that Çeçen had to come.   ✓ *Deontic*
     ii. Amur thought that Çeçen was bound to/might come. ✓ *Epistemic*

In Kazakh, the Nominative-subject construction *does* and the Accusative-subject construction *does not* allow an epistemic reading in (5)a and b:

(5)   a. *Men* *se*   *kel-e*   *al-a-dı*   *de-p* *oyla-dı-m.*
       I-NOM you-NOM come-MOD aux-MOD-PERF COMP think-PER-1SG.
       'I thought you could come'   ✓ *Deontic* / ✓ *Epistemic*
    b. *Men*   *sen-i*   *kel-e*   *al-a-d*   *de-p*   *oyla-dı-m.*
       I-NOM you-ACC come-MOD aux-MOD-PER   COMP   think-PER-1SG.
       'I thought you could come'   ✓ *Deontic* / * *Epistemic*

Based on the above evidence from Turkic languages, I propose that Epistemic Modality co-occurs with nominative case licensing at I(nfl).

1.2. THE SECOND PIECE OF THE PUZZLE: AGREEMENT AS MOOD IN THE C-DOMAIN. The distribution of Turkic Subject-Verb Agreement paradigms that vary with the *mood* of the clause: agreement morphology distinguishes clauses in terms of the presence/absence and the type mood.

I disagree with the previous classification in Turkish linguistics (Kornfilt 1984 and subsequent work) on the following grounds: the previous research is focused on Modern Turkish only: the agreement in (6)a has been called the 'verbal paradigm' although it appears on declarative substantives in some dialects as well as on conditional substantives as well (6)c; the one in (6)d is omitted from previous work; and the phrasal and clausal ones in (6)e and (6)f have been collapsed into a 'nominal paradigm'. Such a classification has previously provided the basis for the claim that Agreement is the sole indicator of a Nominative-case subject in a clause . However, in the Turkish examples (6) below, it is clearly observed that these paradigms correspond to types of mood:

(6) a. *Biz gel-di-k*   Mood I-declarative
        We come-PAST-1PL
        'We came/have come'
     b. *Biz iyi-yiz / iyi-yik*   Mood I–declarative-substantive
        We fine-1PL
        We are fine.'
     c. *Biz gel-se-k/   iyi-yse-k*   Mood II-conditional
        We come-COND-1PL fine-COND/1PL
        'If we come, …'
     d. *Biz gel-elim*   Mood II -optative
        We come-1PL
        'Let us come.'
     e. *Biz-im   ev-imiz*   No Mood –possessive [phrasal]
        We-GEN   house-1PL.POS
        'Our house'
     f. *Biz-im   gel-dig-imiz*   No Mood [clausal]
        We-GEN   come-ASP-1PL
        '[the fact/the time] That we came/have come'

In the proposed classification, the so-called verbal paradigm is not restricted to verbal predicates, and it does appear with substantive predicates, at least in the conditional, as shown above; (6)c marks a different mood; (6)e and (6)f differ in terms of the structures they occur in: (6)e occurs in clausal and (6)f in phrasal constructions. The fact that other Turkic languages, e.g. Kazakh, Tuvan, Kazan Tatar, Azerbeidjani, Turkmen, Kirghiz, Altay exhibit identical paradigms support the proposed classification (Aygen 2002/2004).

The distribution of the agreement paradigms in terms of the type of clauses they appear in implies that agreement at a clausal level marks mood. The choice of Agreement Paradigm depends on the mood feature of a clause. If agreement marks mood and mood is a feature on C, we would expect to find agreement morphology on overt C's. Tuvan data in (7) illustrate the morphological manifestation of agreement as mood on a lexical Complementizer *užurumda* 'because'.

(7)   *Men   oray   kel-gen   užur-**um**-da,   ava -m   èedir udu-vaan.*
        I-NOM late   come-PER because-**1SG**-adv mother-1SG sleep-NEG-PERF-1
        'Because I arrived so late, my mother couldn't fall asleep.'

1.3. THE PROPOSAL. The distributional properties of Nominative Case and Mood/Epistemic Modality and the distribution of Agreement paradigms as an indication of the presence or absence of Mood in Turkic languages suggest (8):

(8)   Nominative Case appears as a synthesis of *Mood* (Comp domain) and *Epistemic Modality* (Infl domain).

I propose that *Mood* is a syntactic nominative case feature on the head of the clause (Comp). Semantically it serves to distinguish clauses in terms of the attitude someone has toward what it expresses. *Epistemic Modality* is an Inflectional feature in Turkic languages.

    Embedded imperatives give us a good testing ground for the proposed analysis. In (9)a, either nominative or accusative case is allowed with the same agreement morphology. In (9)b, lack of agreement is out with a non-nominative subject:

(9) a. *Ben   [o-Ø   /on-u   gel-sin]   iste-di-m*
        I-NOM s/he-NOM /s/he-ACC come-3SG   want-PERF/PAST-1SG.
        'I wanted him/her to come.'
     b. **Ben   [on-u   gel]   iste-di-m*
        I-NOM s/he-ACC come   want-PERF/PAST-1SG.
        Intended meaning: 'I wanted him/her to come.'

Previous analyses that attribute Accusative-subject structures to a lack of agreement cannot account for the contrast in (9). For the proposed analysis, however, it is the lack of either one or both ingredients of nominative case that allows Acc-subject constructions. Acc-subject structures do not bear epistemic modality, which is attested in (10) below:

(10) a. *Ben   [o-Ø   gel-ebil-sin]   iste-di-m*
        I-NOM s/he-NOM   come-MOD-AGR want-PERF/PAST-1SG.
        'I wanted (it to be possible that) s/he to come'
     b. **Ben   [on-u   gel-ebil-sin]   iste-di-m.*
         I-NOM   s/he-ACC come-MOD-AGR want-PERF/PAST-1SG.
         i. *'I wanted (it to be possible that)s/he to come'   *Epistemic
         ii. 'I wanted her/him to be able to come'   ✓ Deontic

In the proposed analysis, it is the lack of Epistemic modality that allows the Acc-subject. Crucially, Imperative refers not only to the mood but particularly to the illocutionary force of the proposition that does not require the presence of modality,

whereas other mood categories (subjunctive, declarative, etc) depend semantically on the presence of modality (Kamp 1981, Heim 1982). This unique property of the Imperative allows a structure with no modality, regardless of the presence of a Mood feature; hence, the Acc-subject.

This analysis can be extended to Inflected Infinitives with Nominative Subject in Catalan that are [-T/+Agr]. In Catalan (Picallo 1984, cited by Iatridou 1993) there is a [-T/+Agr] combination in the *subjunctive*, where +Agr is argued to co-occur with the Nominative licenser:

(11)   *vols   que   els   nens/ec   mengin   patates*
        want/2SG that the   children/NOM eat   potatoes
        'You want that the children eat potatoes'

By contrast, according to the proposed analysis, the embedded clause with the nominative subject is [+mood], therefore [+NOM] in the C domain, and [+modal] by virtue of occurring within the modal domain of the higher verb *vols* 'want', therefore [+Modal] in the I(nfl) domain. There is no need to resort to the presence of Agreement to account for Nominative licensing.

2. THE SYNTAX OF NOMINATIVE-CASE AND FINITENESS. Finiteness is defined by the presence of a Nominative-case subject as well as restrictions on the movement of arguments out of a clause. The syntactic mechanism of Nominative case in English-type languages involves some kind of a movement: The subject phrase to the IP to get its case. Unless we have an interrogative or an Inverted Conditional, there is no movement involving the CP. I propose that finiteness as a precondition for Nominative case should be replaced by a requirement for Mood and Epistemic Modality. Furthermore, in Turkic languages, I suggest that we do not need syntactic movement. The relevant syntactic mechanism is one of AGREE (Chomsky 2001): AGREE refers to finding identical features on phrases and heads. The subject phrase needs to make sure the type of mood in a clause is indicated by the relevant subject-verb agreement and that there is epistemic modality in the clause. Phrasal movement of any argument as observed in clause internal scrambling is triggered independently of case (Aygen 2000, Miyagawa 2003). This analysis is further supported by the arguments in Butler (2003) who argues that a higher Epistemic Modality head is what creates a syntactic domain that does not allow further syntactic operations such as movement.

3. PREDICTION FROM THE PROPOSED ANALYSIS: THE ECM HYPOTHESIS. The prediction of the proposed Nominative Case feature is the following: if Nominative case is a product of the synthesis of *mood* and *modality* on C and I respectively, the absence of one of these will make the structure an ECM, i.e. a clause with a non-nominative subject. This prediction is attested. Many languages do not allow both mood and epistemic modality in ECM clauses. At least one of the relevant functional categories where mood (Comp)

and epistemic modality (Infl) reside is empty. Some of the languages in which this pre-diction is attested are Greek, European Portuguese, and English.

Iatridou (1993) discusses Agreement as a possible case licenser in Greek and shows that it is not possible. Consider (12) and (13):

(12)   *vlepo to Kosta na tiganizi psaria*
        I see DET Kosta.ACC fries fish
        'I see Kostas fry fish.'

(13)   *elpizo o Kostas na tiganizi psaria*
        I hope DET Kostas/NOM fries fish
        'I hope Kostas fries fish'

If Kostas were replaced by *ta pedhia* 'the children', the embedded verb would be in the 3rd person plural form *tiganizun* in both (12) and (13). This casts doubt on the pos-sibility that [+Agr] is a case licenser. Based on the ungrammaticality of (14) with the past tense morpheme, Iatridou (1993) argues that [+T] is a case licenser:

(14)   **idha/vlepo ton Kosta na tighanize psaria*
        (I) saw/see Kosta.ACC fried fish

(15)   *elpizo o Kostas na tiganise psaria*
        hope Kostas.NOM fried.3SG.PAST fish
        'I hope Kostas fried fish'

The presence of past tense is not the only parameter that differentiates (14) from (15): the matrix verb *elpizo* 'hope' introduces possible worlds, i.e. one that creates a modal context for Nominative licensing.

In European Portuguese, we observe that [-indicative] subordinate contexts are non-finite unless there is a modal: nominative subject prepositional constructions (PICs) occur as root clauses and complements of volitional predicates, two environ-ments where the presence of mood is required: [+/-indicative] in root clauses and [+indicative] in subordinate ones. In [-Indicative] clauses, the structure becomes an ECM complement.

(16)   *Eu vi-os$_i$ [ec$_i$ a   trabalhar(em)]*
        I   saw   them   PREP working
        'I saw them working.'

(17)   *Eu quero [os meninos a   trabalharem ja]*
        I   want the children PREP working   now.
        'I want the children to work now.'

Note that the accusative subject occurs within the domain of a non-modal matrix verb, *vi* 'see', whereas, the nominative subject complement clause in (17) is within the domain of a modal verb, 'want'. The contrast in (16) and (17) is similar to the Modern

Greek examples in (14) and (15) above, because the same contrast is discussed with the same ECM predicates. This contrast is predicted by the ECM Hypothesis and is identical to (1)a and b in Turkish. The example in (16) lacks the modal context provided by the verb 'want' in (17), hence the ECM.

Furthermore, the optionality of Agr in (16) is similar to Turkish ECMs: they may mark the *optionality* of mood in the absence of modality. The syntactic distribution of PICs in European Portuguese indicate that they are possible within a [-Indicative/+Conditional/Subjunctive] Mood, that is, in structures where C is -nom and cannot license a Nominative subject. Hence, they become ECM constructions. I-to-C is not triggered because Infl does not have a +nom feature.

The lack of modality in ECM constructions is observed in English, as well, in (18):

(18)   a. I consider/assume him to be/ to have been absent
         b. I consider/assume him to be/ to have been going to the party.
         c. * I consider/assume him to have to be absent/to be able to go to the party.

These are *accusativas cum infinitivo* constructions. The presence of the complementizer 'that' allows the subordinate clauses to have a nominative subject. Following Frajzyngier (1995), I suggest that it is exactly the modal and maybe the mood marking nature of the complementizer 'that' that allows a fully inflected clause to follow, and that it is the lack of such a complementizer that makes (18)c above ungrammatical.

4. CONCLUSION AND THEORETICAL IMPLICATIONS. The major theoretical implication of this analysis is that it excludes the Tense vs. Agreement-based distinction of various constructions within languages and among languages. It also supports the *uncoupling* of Case and Agreement (Aygen 2002, in review). It provides a uniform account of Nominative Case in both declarative and subjunctive clauses. Including the C [Mood] and I [Modality/Tense] systems into the Nominative-case analysis simplifies the theory for languages where movement (Pesetsky & Torrego 2001, Raposo 1987, 1989) is argued to be the syntactic operation. In particular for Turkic languages, I argue that there is no syntactic movement involved in these structures. The requirement of Epistemic Modality and mood as syntactic features in structures with Nominative Case in Turkic languages seems to be promising to account for other languages, particularly Romance languages with inflected Infinitives.

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☙

FOR THE UNITY OF MEANING OF THE POLISH VERBAL PREFIX *ZA-*

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VERBAL PREFIXATION in Slavic (and thus also in Polish) is closely connected with the elusive phenomenon of Slavic aspect, since the commonly recognized, primary function of verbal prefixes is to indicate perfectivity. In the chapter on the morphology of Polish verbs (Wróbel 1984) in the representative *Gramatyka współczesnego języka polskiego* (Grzegorczykowa et al. 1984), Wróbel states, 'from a formal point of view, a verbal derivative which differs from the verb's simplex form only in the presence of a native prefix (and, optionally, the postfix *się*) is always perfective' (Grzegorczykowa et al. 1984:490, my translation)[1]. The perfectivizing function of the prefix *za-*, counteracted by the imperfectivizing action of the stem suffix *-ywa-*, further overridden by the addition of a second prefix (*po-*), is illustrated in example (1) with a series of infinitives related to the simplex verb *pisać* 'write'. The layering of aspectual and semantic contrasts in the derivatives of the verb is represented by the pairs: *pisać* (IMP) 'write': *zapisać* (PRF) 'write something down'; *zapisać* (PRF) : *zapisywać* (IMP) 'write things down'; *zapisywać* (IMP) : *pozapisywać* (PRF) 'write down a concrete/limited number of things'.

(1) a. *pisać* (IMP)   : *zapisać* (PRF)   : *zapisać się* (PRF)
     'write'   *za*-write   'za-write oneself down'/
     'write something   'cover something   'register'
     down'   with writing'

    b. *zapisać* (PRF)   : *zapisywać (się)* (IMP)
     'write something   'write things down'/'register several times/
     down'   be engaged in the activity of registration'

    c. *pisywać* (IMP)   : *zapisywać* (IMP)
     'write frequently'   'write things down'

    d. *zapisywać* (IMP)   : *pozapisywać (się)* (PRF)
     'write things down' 'write down a limited number of things'/
                          'register for a limited number of activities'

It has to be made clear that aspectual contrast in Slavic is a contrast between perfective and imperfective, the two terms being understood in their traditional sense as denoting processes that are viewed as complete and incomplete (the Polish terms are *aspekt dokonany/niedokonany* 'accomplished/not accomplished')[2]. Unlike English and many other languages where the perfective/imperfective contrast is communicated only in the finite, tense-marked forms of the verb (usually the past tense), the

perfective/imperfective opposition in Slavic manifests itself obligatorily on all verbal forms, including the infinitive, the imperative and the participles.

As evidenced by the verb ***zapisywać*** (IMP) in example (1)c, which forms a contrastive semantic (but not aspectual) pair with the verb *pisywać* (IMP) in (1)c, the presence of a native prefix on a verbal derivative does not guarantee the verb's perfectivity—when the verb's stem contains an imperfective marker such as *-ywa-*, the verb remains imperfective in spite of the addition of a prefix. It is possible, however, to perfectivize the verb again by adding another preverbal prefix, as in the case of the verb ***pozapisywać*** (PRF) in (1)d, which has two preverbal prefixes: *po-* and *za-* on top of the imperfective marker *-ywa-*.

Verbal prefixes convey a rich array of meanings and adding them to the verbs' bases ('simplex forms') changes not only the aspect of the verb but also its semantic and syntactic characteristics. Therefore, from the point of view of the results verbal prefixation produces, the process in Slavic is both grammatical and lexical[3]. It is grammatical because prefixation affects the grammatical category of aspect, and it is lexical because by its nature it belongs to the domain of derivational morphology (and word-formation), and as such, has obvious effects on the verb's lexical meaning and syntactic behaviour[4].

1. OBJECTIVE. *Za-* is classed among the oldest (Tabakowska 2003:157) of the sixteen non-foreign verbal prefixes in Polish (Grzegorczykowa et al. 1984:470). It is very productive, being second only to the prefix *z-/s-* (as in *spisać* [*z*-write]'produce a record in writing'), with a frequency of occurrence rate comparable to that of the native prefixes *po-* (*popisać się* 'give a show'), *wy-* (*wypisać się* 'write off the list'), *o-* (*opisać* 'describe'), *u-* (*upić* 'drink a bit of something'), *na-* (*napić się* 'have a drink'), *przy-* (*przypisać* 'ascribe to') (Grzegorczykowa et al. 1984:471). It is identical in form to the preposition *za* 'behind, over, on the other side, for, instead of', to which it is generally assumed to be related both historically and in function (Townsend & Janda 1996:134, Tabakowska 2003: 156)[5].

The aim of the present study is to show that just as the diverse uses of the preposition *za* can be related to the underlying, prototypical sense of spatial **location behind** a barrier (Bacz 1995, Bacz 2004), so can the various meanings of the verbal prefix *za-* be shown to be all somehow motivated by the idea of **crossing (going) over or behind** some boundary (in time or in space). It is assumed, in line with the cognitivist view of meaning, that visual perception of configurations in space underlies our understanding and conceptualization of all other relations, including relations expressed by language, and that spatial images (Langackerian *image schemas*) provide comprehensive (and easily comprehensible) semantic models for language categories[6]. Semantic parallelism between the preposition *za* and the verbal prefix *za-* in Polish has been argued for in a recent cognitivist article by Tabakowska (Tabakowska 2003); a cognitivist interpretation of two basic senses of the prefix *za-* (the sense of covering and the sense of preserving/ securing) was suggested in an earlier study on Polish perfectivizing prefixes by Dąbrowska (1996). My analysis of *za-* elaborates

on the findings of these authors while keeping in focus the idea of semantic unity of this notoriously diversified prefix.

2. ANALYSIS. The authors of the biggest recent *Słownik współczesnego języka polskiego [Dictionary of Contemporary Polish]* (Dunaj et al. 1996:1301) distinguish eight unrelated meanings for the prefix *za-*; a popular Polish grammar for foreigners (Bartnicka & Satkiewicz 2000:273), in an attempt to offer a comprehensible overview of the problem of *za-* for learners of Polish, suggests eleven different senses for the prefix. A semantic network model proposed for *za-* by Tabakowska (2003:172) reduces the perfectivizing uses of the prefix to five types related to two prototypical centres: a centre based on orientation of space relative to landmark as in the verb *zaskoczyć kogoś* [*za*-jump somebody (from behind)] 'surprise somebody', which has inherent front/back orientation (Tabakowska 2003:168) and a centre based on orientation of space relative to observer (all other perfectivizing uses with landmarks of no distinguishable inherent orientation—Tabakowska 2003:168–71). In my own preliminary analysis of *za(-)* (Bacz 1995), carried out from the perspective of the Guillaumian linguistics principle of the unity of sign and meaning, I suggest that the prefix requires two potential meanings: one to capture its intensifying function (as in *zaprzestać czegoś* (PRF) [*za*-stop something:GEN] 'abandon some activity'; *zawrócić* (PRF) [*za*-come back] 'turn back') and one for the different varieties of its aspectual 'going-over-and-behind' sense. In this paper, I argue that the usage types distinguished for the prefix are all motivated by one underlying (prototypical) spatial sense of 'going over and behind a boundary' which delimits (in time or in space) the activity evoked by the verb. The usage types of *za-* discussed in this paper represent different extensions (different semantic variants) of the prefix's prototypical meaning and are illustrated in examples (2) to (12) below. The sentence examples are my own, and they relate the uses of the prefix listed in the *Słownik współczesnego języka polskiego [SWJP]* (Dunaj 1996) and two Polish grammars, *Gramatyka współczesnego języka polskiego* (Grzegorczykowa 1984) and *Gramatyka języka polskiego. Podręcznik dla cudzoziemców* (Bartnicka & Satkiewicz 2000).

   The most frequently quoted use of *za-*, listed first in the dictionaries and grammars (see Dunaj 1996:1301, Bartnicka & Satkiewicz 2000:273), concerns the purely grammatical, perfectivizing function of the prefix, illustrated by the contrastive sentences (2)a and (2)b and a series of imperfective/perfective infinitives in (2)c[7].

(2)   a. *Czy tu   można   parkować?*
         if   here can:3SG:IMPERSONAL   park
         Can one park here?
      b. *Czy mogę   gdzieś   tutaj **za**parkować/*parkować (samochód)?*
         if   can:1SG somewhere here   **za**-park/*park (car)
         Can I park (the car)(= find a parking spot) somewhere here?
      c. *palić*   :   ***za**-palić*   *telefonować* :   ***za**-telefonować*
         smoke   **za**-smoke   call   **za**-call
         'to smoke'   'to have a smoke'   'to call'   'to make a call'

In the 'pure perfectivity' use of example (2), the difference between the imperfective and the perfective infinitives for the English verb *to park* (*parkować* versus *za-parkować* in (2)a and (2)b) can be interpreted as a difference between general and specific. In (2)a, the infinitive *parkować* evokes the activity of parking as a type of activity in general; in (2)b, the infinitive ***za*-parkować** calls to mind a specific instance of that activity (something like 'to park once, on one occasion'). That's why the imperfective, unprefixed form is not compatible with grammatical elements that imply specificity, such as the specific trajector (the personal pronoun subject 'I' rather than the impersonal 'one'—*mogę* versus *można* in Polish*)* and the indication of the event's location ('somewhere here'—*gdzieś tutaj*). The perfective versus imperfective distinction in Slavic can be visualized with the help of the nominal count-versus-mass concept of *boundedness* applied to activities expressed by verbs (see Langacker 1991:59–100): perfective verbs are seen as evoking processes in time that are constrained by being tied down to specific details (all this is covered by the broadest sense of the term *bounded*), while processes that are general and totally *unbounded* represent the category of imperfectives[8].

The examples in (3), (4) and (5) show that the boundedness (perfectivity) of processes expressed by *za*-prefixed verbs manifests itself through different syntactic means. In (3)a, illustrating the aspectual pair *grać* 'play': *zagrać* '*za*-play something', the perfectivity of the *za*-verb is reflected on the level of a sentence in the verb's direct object, which, in terms of a cognitivist analysis, is the primary landmark of the evoked event. The spatial boundaries of this direct-object landmark impose a boundary on the process expressed by the verb. The prefix's over-and-behind interpretation applies to the spatial boundaries of *Chopin's mazurka* (the direct object) in (3)a which, by extension from the semantics of the intransitive-to-transitive shift in the verb *play*, has come to denote the boundary of the process. Additional examples (***zanucić, zakopać***) representing the intransitive to transitive shift resulting from *za*-prefixation are given in (3)b. See also *palić* 'to smoke' versus ***za*palić (papierosa)** 'to smoke a cigarette' in (2)d.

(3)   a. *Mateusz   **za**-grał   mazurka   Szopena.*
        Matthew   **za**-played mazurka:ACC Chopin:GEN
        Matthew played a mazurka by Chopin.
     b. *nucić   :   **za**-nucić melodię*
        hum   **za**-hum tune:ACC
        'to hum'   'to hum a tune'

        *kopać w piasku   :   **za**-kopać autko   w   piasku*
        dig   in sand:LOC   **za**-dig   toy car:ACC in sand:LOC
        'dig (= play) in sand'   'bury a toy-car in sand'

In (4)b, the boundary of the activity expressed by the verb ***zajechać*** 'arrive' is provided by the spatial boundary of the adverbial nominal *dom* 'home' or *miejsce* 'place, location' (primary/secondary landmark), which overtly (the presence of the adverbial is

optional) specifies the destination (and therefore, the end limit) of the verb's activity of going somewhere. In the process of arriving at a destination, the trajector (the event's agent) is visualized as crossing the boundary separating 'home' from what is 'non-home'[9].

(4) a. *Powinniśmy już   jechać do domu.*
     Should:1PL   already go   to   home.
     We should be going home.
    b. *Nareszcie **zaj**echaliśmy   (do domu / na miejsce)*
     at last   **za**-came/went:1PL (to home / at   [our] place)
     At last we have arrived home.

In (5), the activities denoted by the *za*-verbs are bounded by their own end limit in time. The prefix indicates that the activity expressed by the simplex verb has come to its natural end because it has produced a change of state in the trajector (the object affected by the activity), the expectation of result constituting part of the meaning of the prefixed verb. The new state the activity's object finds itself in is a natural consequence of the activity expressed by the simplex verb; usually, it is a state of forced immobility or a state of death (real or metaphorical). The change (from action to state) the trajector undergoes (communicated by the *za*-perfectivization) can be represented as crossing (going over and behind) the end boundary of the activity expressed by the simplex verb. *Za*-verbs denoting a change of state resulting from the activity expressed by the simplex verb are characteristic of emphatic spoken style. They are often accompanied by the idiomatic expressions *na śmierć* 'until death', *na amen w pacierzu* 'to the amen in a prayer' (= for good, forever, never to be reversed) which intensify the impression of finality or 'a maximally negative consequence' (Grzegorczykowa et al. 1984:486, my translation).

(5) a. *Ta   praca bardzo   go   męczy.*
     this job   very much him:ACC tires
     This job makes him extremely tired.
    b. ***Za**-męczysz   mnie   tymi   pytaniami   na   śmierć.*
     will **za**-tire:2SG me:ACC   these questions:INSTR onto death:ACC
     You'll make me sick to death with these questions.
    c. *nudzić kogoś/się   : **za**-nudzić kogoś/się   (na śmierć)*
     bore   somebody/oneself   **za**-bore   somebody/oneself to   death
     'to bore/to be bored'   'to bore somebody stiff/to be bored stiff'

     *bić   (kogoś)   : **za**-bić kogoś*
     beat (somebody)   **za**-beat somebody
     'to beat somebody'   'to kill somebody by beating them'[10]

Many of the perfective *za*-verbs expressing ultimate consequences of the activity denoted by their imperfective simplex form, such as the verbs **zakleić** 'glue up'(note 10), **zalać** 'flood up' (6)a, **zaszyć** 'sew up' (6)b, **zabielić** 'make white', **zagracić** 'cover with junk' (note 11) can also be classed with the usage type of the prefix described in the literature as representing the sense of 'covering' (Janda 1986:122, Dąbrowska 1996:482–83, Tabakowska 2003:170). In the covering use of *za*-, the primary landmark (the object affected by the action of the *za*-verb) is separated from view (i.e. put behind a barrier or boundary) by a secondary landmark (overtly specified or presupposed) which refers to the instrument in the activity denoted by the verb. In example (6a) *Sąsiedzi na górze lali wodę na podłogę i **za**lali nam mieszkanie* 'Our neighbours upstairs poured water on the floor and **za**-poured (flooded) our apartment', the primary landmark 'our apartment' is completely covered with the activity's instrument (secondary landmark) 'water', so that it cannot be seen. The secondary landmark (instrument of the verb's activity) evokes the barrier or a boundary the object of the activity is put behind.

(6) a. *Sąsiedzi   na górze lali   wodę   na podłogę i   **za**lali*
        neighbours upstairs   poured water:ACC on   floor:ACC and **za**-poured
        nam   mieszkanie.
        us:DAT   apartment
        Our neighbours upstairs poured water on the floor and flooded our apartment.
     b. *szyć   :   **za**szyć   chlapać (się)   :   **za**chlapać*
        sew   **za**-sew   splash   **za**-splash
        'to sew'   'to sew up'   'to splash'   'to cover by splashing'[11]

Contrasting with the ultimate completion sense of *za*-verbs (as in **zabić** 'kill', **zamęczyć** 'tire out', **za**nudzić 'bore to death', **za**szyć 'cover by sewing up' in 5 and 6), whose activity brings about a change of state in the trajector, the *za*-examples in (7) evoke activities whose result could be called partial. Their effect is slight and less final, but they do bring about a change of state that can be represented as crossing a boundary, here the boundary between the activity and the resultant state. In (7)b, with the verb *zaciąć się* (**za**-cut) 'to nick one's chin', the boundary defining the end of the process is the physical, spatial boundary of the trajector's skin that was untouched and now has been gone through in the process of *za*-cutting.

(7) a. *Te   nożyczki   dobrze tną.*
        these   scissors   well   cut :3PL
        These scissors cut well.
     b. ***Za**ciąłem   się   przy goleniu.*
        ***Za**-cut:1SG:MASC myself at   shaving.
        I've nicked my chin while shaving.

      c. *drapać*   :   ***za****drapać*
         scratch   :   ***za***-scratch
         'to scratch'   'to make a small scratch'

The examples in (8) contain intransitive verbs of short duration where the time limit of the verb's activity marks the boundary of the process on the time axis. By the very fact of coming to an end, activities of short duration imply a change (from the state of activity to the state of non-activity), which again can be represented as going over a boundary. The difference between the examples in (4) and those in (8) lies in the fact that the activities denoted by the *za*-verbs in (8) do not result from the activities denoted by their simplex verbs. Grammarians observe that *za*-verbs of short duration belong to the lexical class of verbs of perception: they usually describe phenomena that are perceived by the senses of sight, hearing, smell and taste, as evidenced by examples (8)b and (8)c.

(8)   a. *Telefon dzwonił   dziś   całe   popołudnie*
        Phone was ringing   today   all   afternoon:ACC
        The phone has been ringing all afternoon today.
    b. *Telefon **za***dzwonił i   **za***milkł.*
       phone   ***za***-rang   and   ***za***-went silent
       The phone rang once and stopped.
    c. *świecić*   :   ***za****świecić*
       shine   ***za***-shine
       'to shine'   'to shine for a moment/to start shining'

       pachnieć   : ***za****pachnieć*
       smell   ***za***-smell
       'to smell'   'to smell for a short while/to begin smelling'

Za- verbs of short duration are often classed together with inchoative verbs, such as the verbs ***za****kochać się* 'fall in love' (9)b or ***za****chorować* 'fall sick' (9)c. The meaning contributed to these inchoative verbs by *za-* is to emphasize the beginning of the activity. The boundary that is being crossed is again the boundary between non-activity and the activity expressed by the verb. The function of *za-* in this use is to provide a starting-point limit to the unbounded image of the verb's imperfective form.

(9)   a. *Janek kochał się   w   Marysi.*
       John loved   himself in   Mary.
       John was in love with Mary.
    b. *Janek **za***kochał się   w   Marysi.*
       John   ***za***-loved himself in   Mary.
       John fell in love with Mary.

(9) c. *chorować* : ***za**chorować*   *świecić*   :   ***za**świecić*
    be sick   ***za**-be sick*   shine   ***za**-shine*
    'to be sick'   'to get sick'   'to shine'   'to begin shining'

Inchoative *za*-verbs (9) and *za*-verbs of short duration (8) focus on the fleeting character of the process denoted by the verb. In contrast to the examples in (8) and (9), the verbs with *za-* in the usage type illustrated in (10), i.e. ***za**spać* 'oversleep', ***za**siedzieć się* 'stay too long', and ***za**gapić się* 'look too long', express excess, i.e. going beyond what's considered the norm for the activity evoked (in either duration or in intensity). Exceeding the norm means going beyond the boundaries of what is accepted.

(10) a. *Janek **za**spał   i   spóźnił się   do szkoły.*
     John   ***za**-slept* and   came   late   to   school.
     John overslept and was late for school.
   b. ***za**siedzić się*   ***za**gapić się*
     ***za**-sit*   oneself   ***za**-look* oneself
     'to stay too long'   'to look too intensely/to stare too long'

A semantic shift to the opposite is produced by prefixation with *za-* in the aspectual pairs of (11): *pomnieć* (IMP) 'remember' vs. ***za**pomnieć* (PRF) 'forget' and *bronić* (IMP) 'defend' vs. ***za**bronić* (PRF) 'forbid'. These uses still follow naturally from the image of going beyond a boundary. The activity of forgetting (***za**-remebering*) something is separated from the activity of remembering by a barrier that hides the object that's forgotten (the trajector). The object that's forgotten is put behind the barrier marking the end of the activity of remembering and now, access to it is blocked. The case of *zabronić* 'forbid' can be explained as a metaphorical move beyond a barrier defining the limits of defending and protection, expressed by the simplex imperfective *bronić* (see Dąbrowska 1996:483 for a convincing explanation of the link between blocking access-protection and securing for future use). When access to the object of the activity of defending is blocked, contact with that object can be interpreted as metaphorically forbidden. (See also Tabakowska's 2003:170 discussion of *zabronić palenia* 'to forbid smoking'.) We can note in passing that the proximity of the notions of protecting and forbidding is well illustrated in the semantics of the French verb *défendre* which translates as *defend, protect against* (Polish *bronić*) in uses such as *défendre sa vie* 'defend one's life' or as *forbid* (Polish ***za**bronić*), in uses such as in the sentence *Il est défendu de parler au conducter* 'It is forbidden to talk to the driver'.

(11) a. '*Pomnij*   *com*   *ci*   *przykazała*' (from a poem)
     remember:2SG-IMP what:1SG you:DAT   bid:3SG:FEM
     Remember what I told you to do.
   b. ***Za**pomnij*   *co*   *ci*   *powiedziałam.*
     ***Za**-remember:2SG:IMP*   what   you:DAT   told:1SG:FEM
     Forget what I told you.

    c. *bronić*   :   **za**bronić
       defend   **za**-defend
       'to defend, protect'   'to forbid'

In the final set of examples, (12), the function of *za*- can be described as intensifying. In a prevailing number of instances representing this usage, *za*- is added to verbs that are already perfective, so it cannot bring about their perfectivity. Its role, then, is to intensify the already perfective meaning of the verb[12]. The examples in (12)a show that the presence of *za*- strengthens the impression of perfectivity conveyed by the verb by imposing an additional boundary (of a different kind) on an activity that has already been bounded. In the perfective infinitive **za**strzelić (PRF) 'shoot down', derived through *za*-prefixation to the perfective infinitive *strzelić* (PRF) 'fire a shot', the change-of-state/ ultimate consequence perfective meaning (as illustrated in (5)) combines with the single occurrence meaning of the verb *strzelić* (PRF) 'fire a shot', which forms an aspectual pair with the imperfective *-a-* infinitive *strzelać* (IMP) 'shoot (several times)'. Thus, the addition of a prefix to a form that is already perfective strengthens the impression of perfectivity in the lexical meaning of the verb.

    In (12)b, the addition of the prefix changes the stylistic value of the verb. The prefixed forms **za**przestać 'to stop', **za**wezwać 'to call', **za**kupić 'to purchase' are characteristic of formal Polish. One could argue that switching to a formal register represents the activity of crossing the line between the neutral and the marked on the level of style, and thus, going beyond a boundary.

(12) a. *strzelić*(PRF) :   **za**strzelić kogoś (PRF)   vs. *strzelać* (IMP)
         shoot once   **za**-shoot somebody   shoot
         'to fire a shot'   'to shoot somebody down'   'to shoot'
      b. *przestać* (PRF) :   **za**przestać (PRF)
         stop   **za**-stop
         'to stop'   'to stop'(formal)

         wezwać (PRF) :   **za**wezwać (PRF)
         call   **za**-call
         'to call'   'to call' (formal)

3. CONCLUSION. The analysis of *za*-prefixed Polish verbs has shown that verbal prefixation is never semantically vacuous, and that diverse uses of *za*-prefixed verbs can be given a unified description. Whether the addition of the prefix changes the aspect or the lexical meaning of the verb, its semantic contribution can be represented as an extension of the underlying, prototypical sense of *za*- to communicate the idea of going over and behind a boundary.

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1   The perfectivization-by-prefixation rule does not apply when a foreign prefix, such as **re**- or **de(z)**-, or the very infrequent prefix **niedo**- are added to the verb's base, as illustrated by

the following sets of infinitives: *organizować* (IMP) 'organize' versus ***re**organizować* (IMP) 'reorganize', ***dez**organizować* (IMP) 'disorganize' but *zorganizować* (PRF) 'get organized'; *słyszeć* (IMP) 'hear' versus ***niedo**słyszeć* (IMP) 'not to hear well/ be hard of hearing' but ***u**słyszeć* (PRF) 'to hear (= to acknowledge having heard something, to learn something)', ***za**słyszeć* (PRF) 'to learn something that's hearsay' (Grzegorczykowa et al. 1984:490).

2   This traditional definition of perfective/imperfective aspect does not agree with with Lan- gacker's (1991:85–91) understanding of perfectivity as 'boundedness within the scope of predication'.

3   Examples of semantic and grammatical changes produced by prefixation with *za-* can be furnished by the aspectual pairs: *bić* (IMP) : *zabić* (PRF) and *sypać* (IMP) : *zasypać* (PRF). When *za-* is added to the imperfective infinitive *bić* 'beat', the perfective derivative is a dif- ferent lexical verb *zabić* 'kill'. In the pair *sypać* 'fall (of snow)' : *zasypać* 'cover with a solid substance, such as snow', the imperfective **intransitive** verb *sypać*, as in: *Od rana dziś sypie i sypie* 'Since early morning today it's been snowing and snowing', changes its grammatical status and becomes the perfective **transitive** verb *zasypać*, as in: *Śnieg zasypał całe miasto* 'Snow has covered the whole town.'

4   Polish grammarians (see Grzegorczykowa et al. 1984 plus sources reviewed in Tabakowska 2003:154-58) distinguish cases of the so-called 'empty prefixes' in Polish, where the prefix appears to change neither the aspect nor the meaning of the verb, as in the verbs *powrócić* 'return' : *wrócić* 'return', *siąść* 'sit down': *usiąść* 'sit down', all perfective (Grzegorczykowa et al. 1984:490). Tabakowska (2003:155) observes that the term 'empty prefix' is also used by some grammarians to refer to cases where the addition of a prefix produces a purely aspectual effect, with no changes to the lexical meaning of the verb. My own conviction (which follows from both Cognitive Linguistics and the Guillaumian Psychomechanics of Language) is that there are no semantically empty morphemes and that the meaning of the so-called 'empty' or 'merely aspectual' elements can always be identified, provided an appropriate semantic analysis is carried out.

5   Townsend and Janda (1996:134) observe that 'the subordination of the analytic to the syn- thetic is exemplified by *Slavic treatment of prepositions* (an analytic item) *as prefixes* (a synthetic item) in treating both as components in phonetic words' [my emphasis]; follow- ing her survey of the literature on aspect in Polish, Tabakowska (2003:156) states that 'it is generally assumed that in Old Polish it was prepositions excerpted from adverbial prepo- sitional phrases that were originally used as aspectual verbal prefixes'.

6   This view, in my opinion, agrees with the Guillaumian concept of *the potential significate* if we admit that graphic models of potential significates represent spatial imagery. (See Guil- laume 1984 for the concept of *the potential significate*.)

7   Bartnicka and Satkiewicz (2000:273) observe that *za-* has purely aspectual function when added to verbs of foreign origin with *-owa-* in their stem, as in: ***za**-obserwować* 'to notice/ observe something', ***za**-gwarantować* 'to guarantee something', ***za**-instalować* 'to install something'. Tabakowska's examples of 'pure perfectives' with *za-* are the intransitive verbs: ***za**-szczekać* 'to give a bark', ***za**-żartować* 'to crack a joke', ***za**-salutować* 'to give a salute' and the transitive verb ***za**-śpiewać* 'sing (up) a song' (Tabakowska 2003:171) (cf. my 'verbs of short duration').

8   It should be kept in mind that the opposition between the perfective and imperfective in Slavic does not parallel the difference between the progressive and simple in English.

9   Other *za*-verbs which denote activities whose boundaries are determined by the boundaries of adverbial nominals of place are: ***za-jść*** 'to reach a destination by walking' (versus: *iść* 'to go somewhere on foot'), ***za-brnąć*** 'to reach a destination by wading' (versus: *brnąć* 'to go somewhere by wading'), ***za-wędrować*** 'to reach a destination after some roaming about' (versus *wędrować* 'to walk about, roam') etc. (see Tabakowska 2003:169 and Bartnicka *&* Satkiewicz 2000: 273).

10 Other examples of this type are *jeździć* 'to drive' vs. ***za-jeździć samochód (na śmierć)*** 'to za-drive the car to death (to use it up)'; *kleić* 'to glue' vs. ***za-kleić na amen*** 'to glue something up for eternity'. When the imperfective verb *sypać* is transitive, as in the expression *sypać kwiatki-ACC* 'throw flowers', its perfective counterpart *za-sypać kwiatkami-INSTR* 'cover up with flowers' requires the Instrumental case-marking on the nominal *kwiatki* 'flowers'. The grammatical change of case from ACC to INSTR in this example denotes a semantic change of the role assumed by the entity 'flowers': from the object/patient of the activity of throwing to the participant/instrument of that activity.

11 Other examples of this type include cases of deadjectival and denominal derivatives, such as: *bielić* 'to make white' vs. ***za-bielić (zupę) śmietaną*** 'to make (the soup) white by adding cream' (from the adjective *biały* 'white'), ***za-gracić*** [*za*-junk] 'to cover with junk' (from the noun *graty* 'junk'). For a discussion see Dąbrowska 1996.

12 The intensifying function of *za*- has also been recognized in aspectual pairs, such as *ofiarować się* (IMP) 'to offer oneself': ***za-ofiarować się*** (PRF) 'to offer oneself up' (Bartnicka *&* Satkiewicz 2000:273), where the prefix is said to intensify the lexical meaning of the activity denoted by the verb on top of (or perhaps because of) its perfectivizing effect (which in the case of *zaofiarować się* can be described as a 'one-time particularization').

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THE SEMANTICS OF HIDATSA NP COORDINATION

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HIDATSA IS A MEMBER OF THE MISSOURI VALLEY BRANCH[1] of the Siouan language family. It is primarily spoken on the Ft. Berthold Indian Reservation in North Dakota by approximately 50–100 speakers, most of who are over the age of 50. It is an agglutinating language with many polysynthetic characteristics. Typologically, it is a left branching, head-marking SOV language with productive incorporation.

The language most closely related to Hidatsa is Crow, the other member of the Missouri Valley branch of Siouan: according to Parks and Rankin (2001:104) the two languages diverged from each other approximately 600 years ago. Although Hidatsa and Crow are mutually unintelligible, the two languages still share many linguistic characteristics. Verbal clitics, prefixes, and suffixes make up much of the morphology found in both Hidatsa and Crow. These can include instrumentals, object and subject markers, causatives, number marking, negation, tense and aspect marking, and clause final illocutionary markers. By comparison, nominal morphology is rather impoverished. The most common morphology to be found on nominals consists of possessive markers and determiners. Both Hidatsa and Crow have highly complex determiner systems, whose members often convey differences in definiteness, specificity, and location. Another common aspect of Hidatsa and Crow nominal morphology is the way in which nouns and DPs (Determiner Phrases) are joined together in coordinate constructions. Both languages use cognate morphemes, in Crow the coordinators serve to conjoin nouns and DPs, but in Hidatsa these same morphemes also encode specificity and inclusiveness in addition to their capacity to conjoin nouns and DPs.

The mother language of Hidatsa and Crow is referred to as Proto-Missouri Valley Siouan. Over the last twenty years much work has been done in Proto-Siouan and its daughter languages, particularly in the realms of phonology, morphology, and common root words. However, it has only been within the last five years that a careful comparison of Hidatsa and Crow has taken place to give us a better idea as to the nature of Proto-Missouri Valley Siouan within the larger Siouan language family. What we have learned is that Crow has radically changed the phonological inventory of Proto-Missouri Valley, whereas Hidatsa has been very conservative and has had very few sound changes separating it from Proto-Missouri Valley. Conversely, with regard to syntax, Crow has been the more conservative language and it has been Hidatsa that has show great innovation. One small area of the grammar where this can be seen is in the syntax and semantics of coordinate structures.

I will now give a brief description of how coordinate structures work in Crow. This will be followed by a description of how they function in Hidatsa. I assume that

Hidatsa is the language that is showing innovation. Given this, I will then show the semantic structure of the original Proto-Missouri Valley conjunct, which is reflected in Crow. I will then show the semantic representations of the new more radical way of encoding information that we see today in Hidatsa. To limit the scope of this paper I will only examine the morphemes that encode the coordinating conjunction '*and*'. These are shown in (1).

(1)   <u>Crow</u>   <u>Hidatsa</u>
        -dak   *-k, -šek*

1. COORDINATION IN CROW. According to Graczyk (2005) coordinate noun phrases consist of a series of NPs[2] or Ns with each conjunct followed by the clitic conjunction *-dak* 'and'. Although *-dak* may be omitted after the final conjunct it is usually present. An example of *-dak*[3] can be seen in (2).

(2)   *[awašéelak apsáalookelak] dúatak ammíiliiaxpe alápaššissdaauk*
        *[awašée-**lak** apsáalooke-**lak**] dúat   -ak[4] ammíiliiaxpe alápašši -ss*
        Hidatsa -**and** Crow   -**and** break.camp-SS west   direction-GOAL
        -daa-u-k
        -go-PL-DECL
        'The Hidatsa and the Crow broke camp and went westward'.
                                                        (Apsáalooke bacheeíitche 1986)

In this example, we see two nouns conjoined with the *-dak* morpheme, which is cliticized to both. In example (3) we see *-dak* used to conjoin three nouns.

(3)   *[iáxuhkalak issaxšcilak íiaxassaalak] íiisuukaate duusúum*
        *[iáxuhka-**lak**   issaxšci-**lak** íiaxassaa-**lak**] íiisuukaate duus-úu-m*
        fox   -**and** hawk -**and** snake   -**and** mice   eat -PL -DS
        'Foxes, hawks, and snakes eat mice'. (Reed 1983)

In example (2), the nouns that are conjoined are semantically specific. They are the names of two tribes. In example (3), the nouns that are conjoined are nonspecific. These are 'foxes, hawks, and snakes' in general. Both examples (2) and (3) show examples of *-dak* conjoining nouns. In example (4) we can see that the *–dak* morpheme also joins DPs as well. We know that these are DPs and not Ns because each noun is followed by a determiner, which is then followed by the clitic coordinator.

(4)   *isahkáalaxpe [alúute šúakaatemnak šíiilikaateemnak*
        *isahkáalaxpe [alúute šúa -kaate -m -**nak** šíiili -kaatee -m -**nak***
        isahkáalaxpe arrow   blue -DIMIN -DET -**and**   yellow -DIMIN -DET -**and**

bimmaáhšciikaateemnak híiššikaateemnak] díiah
*bimmaáhšcii -kaatee -m   -**nak** híišši-kaatee -m   -**nak**] díia -h*
green   -DIMIN -DET -**and** red   -DIMIN -DET -**and make**-IMPER
'Isahkaalaxpe, made some small blue and yellow and green and red arrows'.
(Reed 1983)

As can be seen from these examples, in Crow the conjunction *-dak* coordinates both nouns and DPs and it does this regardless of the specificity of the items being joined. In Crow, *-dak* acts only as a coordinator joining two like categories.

2. COORDINATION IN HIDATSA. In Hidatsa, the cognate of Crow's *-dak* is simply *-k*. The facts about the usage of this clitic, however, are not so straightforward. Consider example (5), which has the coordinating conjunction on both nouns and is structurally just like those seen in (2-4) in Crow.

(5)   <u>Non-specific inclusive reading</u>
        wašúkak naxpiccíik šipíišaʔac
        *wašúka -**k**   naxpiccíi -**k**   šipíša -ʔa   -c*
        dog   -**and** bear   -**and** black -D.PL -DECL
        (All) dogs and (all) bears are black. (Boyle 2004)

Although identical in structure to the examples seen in Crow, this sentence does not have the same semantics as the Crow examples. This is shown in the English gloss. In example (5), we can see that when the coordinating conjunction is used on both conjuncts the meaning is inclusive of all members of the sets being conjoined. This is reflected in English by the use of *all* in the gloss. This use of the coordinator *–k* on both conjuncts is the morphological signal that all members of the sets conjoined are included in the semantic interpretation.

    In order to get a non-inclusive specific reading, Hidatsa drops all coordinating conjunctions except for the initial one. This can be seen in example (6).

(6)   <u>Specific non-inclusive reading</u>
        wašúkak icúuwaška naxpiccíiš šipíišaʔac
        wašúka-k   icúuwaška naxpiccíi-š   šipíiša-ʔa   -c
        dog   -and horse   bear   -D.DET black -D.PL -DECL
        (The) dog and (the) horse (and) the bear are black. (Boyle 2004)

In this example, the coordinating conjunction connects specific nouns. Keep in mind that in Crow specificity is not encoded in these conjunctions and that the nouns can be either specific as in example (4) or non-specific as in example (3). In Hidatsa, the single coordinator *-k* is only used to connect specific known entities.

    Hidatsa has developed an additional coordinating conjunction to mark non-specific entities. This coordinator is *-šek* and it can be seen in example (7).

(7)   Non-specific non-inclusive reading
       wašúkašek icúuwaška naxpiccíiwa šipíišoʔoc
       wašúka-šek   icúuwaška naxpiccíi-wa   šipíišo-ʔo -c
       dog   **-and** horse   bear   -I.DET black -I.PL -DECL
       '(A) dog and (a) horse (and) a bear are black'. (Boyle 2004)

In this example,*wašúka* 'dog', *icúuwaška* 'horse' and *naxpiccíi* 'bear' are non-specific
nouns. Clearly, the coordinator *-šek* has developed from the specific non-inclusive
coordinator *-k*, but this is an innovation not seen in Crow. It should also be noted that
in (7), the indefinite determiner *-wa* is used on the NP *naxpiccíi* whereas in (6) the
definite determiner *-š* is used on *naxpiccíi*. These mark only definiteness not speci-
ficity. Specificity is marked by the different coordinators with *-k* marking specific
entities and *-šek* marking non-specific entities.
    The above examples have shown us that in Crow the coordinating clitic *-dak* is
used to conjoin two or more like categories of nouns or DPs. In Hidatsa, the coordi-
nating clitic has morphologically, syntactically and semantically split into a three-way
distinction. A single coordinating clitic, morphologically realized as *-k*, is used on the
first of the conjoined items to connect either a single or a known number of specific
entities. Multiple coordinating clitics, morphologically realized as *-k*, are used on all
of the conjoined items to show that all members of the classes, which are conjoined,
are included. Lastly, a single coordinating clitic, morphologically realized as *-šek*, is
used on the first of the conjoined items to show the coordination of two or more non-
specific entities.

3. THE SEMANTICS OF HIDATSA COORDINATION. The encoding of coordination and
specification as seen in Hidatsa is unusual. Briefly, I will now look at the semantic rep-
resentations of these constructions and show how they differ from each other. First,
let's look at the simple Crow conjunct seen in example (2) with the relevant coordi-
nate structure shown here as (8).

(8)   Simple coordination
       [awašéelak apsáalookelak]
       *[awašée-**lak**   apsáalooke-**lak**]*
       Hidatsa **-and** Crow   **-and**
       'The Hidatsa and the Crow…'

This is a simple case of conjunction and its semantic representation is one of straight-
forward coordination. This is shown in (9).

(9)   Simple coordination
       P (x) & P (y)
       or
       THE HIDATSA & THE CROW…P

Even with the double morphological marking on both conjuncts the semantics of this coordinate structure is what we would expect from a simple statement involving the conjunction 'and'. While this 'and' is not as powerful and all encompassing in its ability to conjoin as the English equivalent, it does serve a similar function when conjoining nouns and DPs[5]. In Crow, the conjunction *-dak* can conjoin proper names (as in 8), plural nouns (as in 3), and also nouns or DPs with different quantificational force. This was undoubtedly the older structure, which would have existed in Proto-Missouri Valley Siouan. After the split that resulted in Crow and Hidatsa as separate languages, Crow retained this older structure but Hidatsa did not.

The semantics of the three Hidatsa coordinate structures are quite different from the logical representation shown in (9). First let us consider example (5), repeated here as (10).

(10)   <u>Non-specific inclusive reading</u>
       wašúkak naxpiccíik šipíišaʔac
       wašúka-k   naxpiccíi-k   šipíiša-ʔa -c
       dog   -and bear   -and black -D.PL -DECL
       '(All) dogs and (all) bears are black'. (Boyle 2004)

Keep in mind that in this Hidatsa construction we have a non-specific inclusive reading. That is to say all members in the conjoined groups are included in this type of statement. The semantic representation of this can be seen in (11).

(11) $\forall x \, (DOG(x) \rightarrow P(x)) \, \& \, \forall y \, (BEAR(y) \rightarrow P(y))$

In this logical representation, we see that a *universal quantifier* is used. This universal quantifier fixes the value of the nouns or DPs that are conjoined and it binds those variables.

Now consider the example shown in (6) and repeated here as (12).

(12)   <u>Specific non-inclusive reading</u>
       wašúkak icúuwaška naxpiccíiš šipíišaʔac
       wašúka-k   icúuwaška naxpiccíi-š   šipíiša-ʔa -c
       dog   -and horse   bear   -D.DET black -D.PL -DECL
       (The) dog and (the) horse (and) the bear are black. (Boyle 2004)

In this construction we see that the reading is for a specific non-inclusive set of nouns or DPs. This conjunction is used when the number of the conjoined items is known. The difference in its semantics can be seen in the logical representation shown in (13).

(13) $P \, (\iota x \, (DOG(x))) \, \& \, P \, \iota y \, (HORSE(y))) \, \& \, P \, \iota z \, (BEAR(z)))$

This logical form gives us 'THE DOG, THE HORSE, THE BEAR…P'. Here we use an *iota operator*. This restricts the nouns or DPs that are conjoined. It acts to limit the conjuncts and gives us the specific reading that exists in this Hidatsa construction.

Lastly, let us look at how Hidatsa encodes non-specific and non-inclusive conjuncts. Here we consider example (7) repeated here as (14). The English gloss has been slightly altered to give a better translation of the Hidatsa.

(14)   <u>Non-specific non-inclusive reading</u>
       wašúkašek icúuwaška naxpiccíiwa šipíišoʔoc
       wašúka-šek   icúuwaška   naxpiccíi-wa   šipíišo-ʔo   -c
       dog   **-and** horse   bear   -I.DET black -I.PL -DECL
       '(A) dog and (a) horse (and) a bear are black'. (Boyle 2004)

This is the manner in which Hidatsa conjoins two or more non-specific nouns or DPs. The semantics for this conjunction is different from those seen in (11) and (13). We can represent the semantics of this type of conjunction in the manner shown in (15).

(15) $\exists x \ (DOG(x) \ \& \ P(x)) \ \& \ \exists y \ (HORSE(y) \ \& \ P(y)) \ \exists z \ (BEAR(z) \ \& \ P(z))$

This logical representation gives us 'THERE IS A DOG AND THERE IS A HORSE AND THERE IS A BEAR…P'. Note that in this representation we use an *existential variable* for discourse existential closure. This allows for a non-specific reading in the semantics.

4. CONCLUSION. We have seen in the above data that languages can have very different strategies for conjoining nouns and DPs. In addition, we have seen how languages can and do change within language families. Hidatsa and Crow represent this change in very clear ways. In Crow, which has the same pattern postulated for the mother language Proto-Missouri Valley, we see the simple conjunction of nouns and DPs. Hidatsa, however, shows a divergent pattern. In Hidatsa we see that this single strategy for conjoining Nouns and DPs has splintered into three separate strategies. The first conjoins non-specific items but also shows an inclusive reading is represented semantically with a *universal quantifier*. The second conjoins specific nouns or DPs but has a non-inclusive reading. This can be represented with an *iota operator*. The third and final strategy for Hidatsa conjunction conjoins non-specific nouns or DPs and also has a non-inclusive reading. This is best represented with an *existential quantifier*. Thus, what Hidatsa shows us is an interesting morpho-semantic split. Hidatsa has three separate methods for conjoining nouns and DPs. This is reflected in the morphology and syntax of the language as well as in its semantic representation.

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2   Graczyk uses the term NP for what is often referred to in modern generative literature as DP (Determiner phrase). In this paper NP (Noun Phrase) is used for phrases headed by nouns and DP (Determiner Phrase) are used for phrases headed by a determiner. Since no theoretical claims rest on this distinction they can generally be viewed as interchangeable.

3   In Crow, [d] changes to [l] intervocalically or: d → l / V__V and to [n] after [m] or: d → n / m__.

4   Abbreviations used in this paper are as follows: DECL = declarative, D.DET = definite determiner, D.PL = definite plural, DIMIN = diminutive, DS = different subject, GOAL = directional goal, I.DET = indefinite determiner, IMPER = imperative, I.PL = indefinite plural, PL = plural, SS = same subject.

5   In Hidatsa, verbs are joined with a continuative morpheme and clauses are joined with switch reference markers.

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☙

ON TIMING AND RHYTHM – IN BRITISH ENGLISH

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TIMING IN LANGUAGE is relevant to language teaching and description, to mechanical speech-synthesis, to psychology, to neuroscience. However, it has hardly been studied: there are no real descriptions. For a useful survey of the present state of affairs the reader may be referred to Couper-Kuhlen (1993:5–14, 79–88). Besides describing 'the isochrony debate' since about 1775—still unresolved today, and without practical, descriptive results—she assesses the two current approaches to rhythm in speech: the teaching-oriented Abercrombie-Halliday approach and the more theoretical (generative) metrical phonology. Since both postulate isochrony, that may explain why they virtually ignore 'allochronous' rhythms and timings. The following treatment of rhythm and timing in GB English was developed and taught since the early seventies in the (erstwhile) English Department of Amsterdam University. It simply assumed that people must learn *non*-isochronous rhythmic patterns and the very fine time-distinctions that implies (e.g. to say *'mind your step'*, wrongly timed—illustratively—all over Amsterdam Airport at least 10,000 times a day), to acquire a foreign, or indeed their native language. My present—still very distant—objective, inspired by Lamb (1999:98ff) on mechanisms of timing control and his 'neurocognitive basis of language' in general, is to relate the account to follow to what really goes on in the human brain.

1. RHYTHM. In teaching the timing of (British) English to non-native university students/teachers of English, I usually found it advisable to initially avoid the complexities of rhythmic structuring and go straight into practising the actual Syllable Duration rules stated below. Ultimately, however, one has to teach the placement of stress-marks and other rhythmic marks in phonetic transcriptions, which in turn presupposes a theory and a description of rhythm. So that is what we begin with here.

The Abercrombie-Halliday approach mentioned above assumes a phonological hierarchy tonegroup>foot>syllable>phoneme for English, with (near-)isochronous stresses. Each foot consists of one (possibly silent) stress followed, or not (!), by one or more unstressed syllables. This allows for only two degrees of stress: stressed and unstressed, and the stress-patterns TROchee (– ˘), DACtylos (– ˘ ˘), and what I propose to call a MONE (–)—fitting the terms to their patterns as my old classics teacher used to say—but not for amPHIbrach (˘ – ˘), iAMB (˘ –) or anaPAEST (˘ ˘ –).

Nearly all verse does indeed seem based on regular alternation of strong-weak stresses only, like Wordworth's iambic *'I wandered lonely as a cloud, that floats on high o'er vales and hills, when all at once I saw a crowd, a host of golden daffodils…'* If

one asks a six-year old to recite a poem like this, the chances are that he/she will pro-duce perfectly isochronous doggerel, i.e. *mechanically,* without putting any 'feeling' or 'meaning' into it. Such 'pendular' movement, obviously, is very human and natural. But put some *meaning* into a poem, a song, or any music-making, and the last thing one wants is a mechanical isochronous rendering. It is of course precisely *meaningful* timing i.e. 'allochrony', that forms the descriptive challenge to linguistics.

After the verse in the preceding paragraph one *could* go on reading perfectly iso-chronously (allowing for silent stresses) to a steady beat or tapping, to sound like the 'caller' in square-dancing. But just try having a conversation like that! Even if in allo-chronous verse and music one may have an isochronous yardstick or 'metrum' at the back of one's mind—related no doubt to regular repetitive motor patterns as in walking, running, assembly-line work—such an awareness is far from obvious or indeed absent (vide Couper-Kuhlen 1993:11–13) in ordinary speech. So an isochronous 'square-danc-ing rhythm' seems hardly the best starting-point (no more than that!) for the descrip-tion and teaching of the actual allochronous rhythms of English speech.

Moreover, even verse rhythms are not always of such a simple one-tier/two-degrees-of-stress type. Kipling's *Mandalay* 'requires' a two-tier/three-degrees type of reading: ɪᴀᴍʙꜱ consisting of ᴛʀᴏchees. The following notation shows one 'locu-tion' or breath-group divided into two 'pieces' or tonegroups, each piece divided into four 'bytes' or rhythm-groups (ɪᴀᴍʙꜱ), each divided into two sub-bytes (ᴛʀᴏchees). The piece-final upturn and downturn marks stand for rising and falling tune-end-ings. The fat horizontal mark indicates a (non-tonic) S(trong) stress, the fat triangles mark *tonic* ditto S-stresses, with ⌐ standing for upward jump, ⌐ for downward jump and ⌐ for upward jump + high fall. The small circles indicate Medium stress (always non-tonic).

(1)   ₒFor theᵎ ⌐wind is| ₒin theᵎ ⌐palm-trees| ₒand theᵎ ⌐temple| ₒbells theyᵎ ⌐say↗↘‖
            ₒCome youᵎ ⌐back you| ₒBritishᵎ ⌐soldier| ₒcome youᵎ ⌐back to| ₒMandaᵎ⌐lay↗↘#

Surely, prose rhythm is even more complicated than this two-tier/three-degrees verse rhythm. Indeed, we find a three-tier/four-degrees kind of rhythm—no more and no less!—in all languages observed hitherto.

Most of these remarks so far are more or less implicit in Cooper and Meyer (1960:5–6). They first show a musical notation with the (four-tier) rhythmical hierarchy so familiar indeed to students of music: measures/bars/feet (we prefer to talk of bytes, and pieces) of two half-notes (minims) consisting of quarter-notes (crotchets) con-sisting of eighths (quavers), consisting of sixteenths… Then they continue: 'Rhythm may be defined as the way in which one or more [or none, we just saw – LvB] unac-cented beats are grouped in relation to an accented one. The five [six, rather – LvB] basic rhythmic groupings may be differentiated by terms traditionally associated with prosody…' This is followed by a table with the patterns for iamb, anapest, trochee, dactyl and amphibrach. But it does not mention, even after two thousand years of versification theory, our ᴍᴏɴᴇ proposed above, nor +ᴅᴀᴄtylos, +amᴘʜɪbrach+ and

anaPAEST+ the only possible groupings with *three* or even *four* w(eak) beats to one S(trong). Cf. |wSww| S| wwSww| S| wwSw| vs. say, |wSw|wSw|wSw|wSw|wSw|, either grouping being in agreement with a Rhythmic Alternation Principle (RAP) saying: no more than two w's between S's (and no more than one at the beginning or end).

Cooper and Meyer then deal in detail with the realisation and perception of rhythmic patterns in music, emphasizing indeed the 'non-congruence' between (isochronous, accent initial) metre and the wealth of *actual* groupings and timings produced by musicians. After treating shortish phrases, however, they then apply the same concepts to 'higher architectonic levels' such as themes, movements, symphonies, resulting in umpteen-tiered-hierarchies and umpteen-plus-one degrees of stress or accent, as indeed also mirrored in metrical phonology. This is where we part company. As pointed out by Fraisse (1957:67–98), sounds and movements directly experienced within one's psychological present of up to about 5 seconds are not at all comparable to 'visualized' rhythms of a minute ago, the day, the week or the year. Van Buuren (2004:117) suggests that a neuro-cognitive *loop* may account for the fact that the beginning of a phrase or 'piece' is still psychologically present at the end of it. The rhythms of speaking, singing, dancing or drumming involve an immediately present *bodily experience,* and it seems indeed a good idea to reserve the term 'rhythm' only for this.

We would define rhythm, then, as the 'RAPping' of events within one's psychological present into (hierarchies of) TROchees, (+)DACtyli, (+)amPHIbrachs(+), iAMBs, anaPAESTS(+) and/or MONES.

Thus, example (2) below is one locution consisting of two pieces consisting of 3 + 2 bytes. Byte-1 = amphibrach+ (amphibrach-mone(iamb)), byte-2 = iamb (amphibrach-trochee), byte-3 = iamb (iamb(iamb-iamb)-mone)), byte-4 = mone, byte-5 = trochee (+amphibrach-mone). If correctly analyzed, this one complex rhythmic pattern 'proves' by itself that prose cannot possibly be stress-timed/isochronous. Verse can be (near-)isochronous only by virtue of its repetition of one pattern: iambs, dactyls, or whatever. But not prose.

2. TEACHING RHYTHM NOTATION. Leaving intonation aside, the next thing we had to explain was where to place locution#, piece‖, byte|, word (space) and syllable (unmarked) boundaries as well as the four stresses ʹS(trong), ˌM(edium), .w(eak) and (unmarked) z(ero) in a phonetic transcription of, say, *'thesecretaryfo reduca tionwasatthe front doornotintheliv ingroom'*. Sub-byte ⦙ and sub-sub-byte ⦂ boundaries, included here in (2), are actually better left out in general for the same reason that musical notation leaves out sub-(sub-) bar-lines. They are of theoretical rather than practical importance, uneasy on the eye, and wholly or largely predictable by rule of thumb.

The crucial criteria are of a linguistic SIGN=FORM ↔ MEANING nature (cf. Van Buuren 2004:115). The phonological word = close-juncture form ↔ meaning *concept,* corresponding to a neurocognitive conceptual nection. Byte = rhythmgroup or one mental-cum-physical gesture ↔ *thought* (consisting of one activated concept/ word preceded and/or followed by automatic reflex concepts/words). Bytes/thoughts may contain sub-(sub-)bytes/thoughts. Bytes combine into pieces. Piece = tune/

tonegroup ⟷ *idea* or constellation of thoughts, i.e. a neurocognitive loop integrating one or more mental gestures. Locution = breathgroup ⟷ *sententia* or constellation/loop of ideas.

(2) ðə ˈsekrəːtr.ri| frr ˌedjuːˈkeɪʃnn| wəz .ətː ðə ˌfrʌntː ˈdɔɔ‖ ˈnɒt| ɪn ðə ˈlɪvɪŋː ˌrʊum#
    z S zːz w| z M zː S   z| z w ː z M ː   S | S | z z S zː   M |
    A [A c c E] A [B c   A c]   A   A   A   A   A   A A A [A c]   A
                              (Y   X)   (X   Y)
    (first line: phonetic transcription, second line: sentence stress, third line: word stress, fourth line: compound stress)

In teaching we start with the traditional distinction between word-stress, compound-stress and sentence stress. The structure of compounds is either XY (ˈliving ˌroom) or YX (ˌfront ˈdoor) or a hierarchy of X's and/or Y's: X(XY)Y ˈwhite ▫board e▫raser, etc. Their forms are (usually) in D. Jones' (2003) English Pronouncing Dictionary (EPD).

The structure of the English word is (h)A(t). Heads and tails consist of B and c syllables, with the following restrictions: (i) no A's and/or B's next to each other, (ii) no more than two c's in a row, (iii) no more than one c at word-beginning and end. Syllables with ə, ɪ, i (including those with syllabic l, n, r 'replacing' ə) are empty, all others are full. A-syllables are always full (F), c-syllables usually empty (e) but may be full (f). B-syllables are usually full (F) but can be empty (E) in tails, in which case we shall write E instead of B. Examples: ˈleɪt-A, ˈleɪtə-Ac, ˈleɪtli-Ac, təˈdeɪ-cA, həvˈtel-cA, ˌsɪgəˈrets-BcA, ˈedjuˌkeɪt-AcB, ˌedjuˈkeɪʃnn-BcAc, ˌedjuˈkeɪʃn.nll-BcAcE, ˌedjuˈkeɪʃnnl.li-BcAccE, ˈsekrətr.ri-AccE, ɪŋˈkrɪmɪ.nətr.ri-cAcEcE, ɪŋˈkrɪmɪ.nətrri.li-cAcEccE. The EPD does not mark or indeed recognize E-syllables, treating them as (identical to) empty c's, conceivably because—given the RAP restrictions (ii) and (iii) above—their distribution is wholly predictable. Allowing for some further slight 'improvements' (replacing EPD ɑː ɜː ɔː iː uː ɪ by ɑɑ ɜɜ ɔɔ ɪi ʊu ɪ in A/B and by ɑ ɜ ɔ i u ɪ in c-syllables, fully writing out syllabic n, l, r, and ignoring syllable-divisions in the latest edition) the transcription and structure of any word can thus be immediately retrieved from the EPD.

The four sentence stresses are Strong, Medium, weak and zero. S and M are traditionally regarded as stressed, w and z as u(nstressed). Each byte takes one S on the A-syllable (of the X) of its main or S(pecified)-concept. This is usually followed and/or preceded by automatic reflex u-words (pronouns, prepositions, judgment-particles…) but there may be sub-activation of M-words (e.g. the Y-elements of compounds) within the same byte. Quite simply then: there is always one S between every two byte-boundaries and one byte-boundary | at the highest semantic/grammatical boundary between every two S's. M-stresses go to the B-syllables of the (specified/ identified) S-word and to the A-syllables of (sub-specified) M-words. All other syllables take z-stress. But if this gives more than two consecutive z's or more than one piece-initially/finally, one of these must be given w-stress by the RAP-rule. The unmarked allocation of w is then to an E-syllable or to the middle one of three z's,

and remains without semantic consequences. But if there is a choice for w-status between two (automatic reflex) u-words, as in byte-3 of (2), the one chosen becomes a '*favoured* automatic reflex'.

3. TIMING, AT LAST. One cannot have melody without rhythm. One can have rhythm without melody. Rhythm (esp. 'stress') is often mixed up with pitch, Another common misapprehension is that rhythm requires regular repetitive movement. But 'pattern' seems enough. '*Come!*' has a rhythmic pattern an English baby will *learn.*

Rhythm is grouping, rapping and timing. Having worked out the 'scansion' of (2), i.e. its grouping into bytes and rapping into stronger and weaker syllables (aka 'accentuation'), there still remains the matter of timing. *Keeping* the scansion of (2), one can easily vary its timing, for instance by 'laying on' a Scottish, French, Nigerian or Indian accent. The quality of one's performance does not matter much. The obvious point is that one can have quite *different* rhythms even with *identical* scansion. Below we shall see that not all vocal timing pertains to rhythm. But for now it is clear that one *must* describe and teach the characteristic *actual* durations between stresses (isochronous or not) and the durations of the syllables in between. This led to the following argument.

Experimenting with British English pepə by saying it with the length of pɔɔpə, and vice versa, and so on, it seemed to me that pɔɔ- is about twice as long as pe-, in musical terms a half-note (minim) against a quarter-note (crotchet). The first-syllable duration of peɪ-pə appeared to be in between these two, i.e. three-eighths (= three quavers); the first syllable in pə-hæps seemed about one eighth-note or quaver in duration. We can go straight into a (simpler but equivalent) numerical notation instead of the musical one by saying that these syllable durations are 4, 3, 2 and 1 quavers respectively. In actual fact, I have always preferred the term mora (NED = unit of metrical time equal to the duration of a short syllable) instead of quaver, in order to avoid the musical connotation. But as 'mora' has since been given quite different meanings in linguistics, it might be preferable to stick to 'quavers' after all. It seemed to make no difference to syllable duration if the initial p of *pepper/paper/pauper* was omitted or replaced by one or more other consonants, but we shall presently see that syllable-initial str and tr do in fact appear to take up more real (if not psychological) time.

Mindful of well-known timing contrasts like 'take Greater London' vs. 'take Grey to London' (Scott 1940:passim), we then made up examples like the following, indicating the apparent syllable durations of the underlined syllables in terms of moras/quavers.

(3) a. ðə w<u>eɪ</u>tə| lɪvd | frəm d<u>eɪ</u>| tə d<u>eɪ</u>‖ tə get| əw<u>eɪ</u># tə lʌndən#   3, 4, 5, 6 moras/quavers

  b. ðə θ<u>ɪŋ</u>kə| wɒnts| tə st<u>rɪŋ</u>| ðæt θ<u>ɪŋ</u>‖ tə hæv ɪz f<u>lɪŋ</u> # blaɪmi #   3, 4, 5, 6 moras

  c. ɪts m<u>eɪn</u>li| ðə r<u>eɪn</u>| ɪn sp<u>eɪn</u>‖ ðət steɪz | ɪn ðə pl<u>eɪn</u> # raɪt#   4, 5, 6, 7 moras

  d. hɪz d<u>ɔɔ</u>tə| went| frəm d<u>ɔɔ</u>| tə d<u>ɔɔ</u>‖ bət nɒt| eni m<u>ɔɔ</u>#   4, 5, 6, 7 moras

  e. wɪə k<u>ɑɑm</u>li| wɔɔkɪŋ| <u>ɑɑm</u>| ɪn <u>ɑɑm</u>‖ ənd mɪin| nəʊ| h<u>ɑɑm</u>#   5, 6, 7, 8 moras

Since whole, half and quarter notes are parts of a musical bar, I postulated that syllable-durations must be part of a psycho-phonetic second (fs), perhaps corresponding to the heartbeat imprinted on people's minds in the womb 'as the great heart of the mother pumped and thumped away above them'. (Morris, 1967: ch. 3). Considering that one can say about six pe-syllables or three pɔɔ-syllables in such a phonetic second, it seemed a good idea to say that an fs consists of 12 moras, by definition. Assuming a heartbeat-rate of 70 per minute that would mean 70 × 12=840 moras/minute corresponding to 60x100 csecs = 6000 csecs/min. So a mora would be roughly 7, or say, between 5 and 9 csecs. This line of argument was inspired by our wish to not only describe and teach relative syllable durations, but also, within reasonably flexible limits, their *actual* durations. Mattell and Meck (2000:95) show that short time (8/12/21-second) estimations. can actually be up to 50% off. At this (our?) level, imprecision rules apparently.

We assumed that this quaver or mora, i.e. roughly 7 centiseconds, was about the shortest time-difference speakers can control until we experimented with pieces like hav ˈkʌmfətə.bəl| ðət ðə .wəz ən əˈtɜɜni# vs. hav ˈkʌmfə.təbəl| ðət .ðə wəz .ən əˈtɜɜni#, the latter somewhat reminiscent of an Indian accent. It seems obvious that one can shorten or lengthen u(nstressed) syllables with less than a mora to make the difference between w and z. Hence it was decided to further sub-divide the mora into 2–3 'points'.

The argument so far led to the five Syllable Duration rules (or 'calculus' rather) sd1-5 below, here applied to my reading, in five breathgroups/locutions, of the IPA-text *The North Wind And The Sun.* Subsequently, the syllable durations in the recording were measured in centiseconds in 'on-screen' intensity-tracings.

The Syllable Duration rules for GB English are (fs =12 moras; mora = 2-3 points):

sd1	Allocate 2/3/4 moras respectively to syllables containing short/medium/long V.
sd2	Add 1 mora for C (sequence) following V in the same syllable.
sd3	Lengthen syllables before byte| piece// loc# boundary by 1/2/3 moras respectively.
sd4	Shorten u-syllables by 1 mora.
sd5	Shorten z-syllables by 1 more point (not applied, being only of theoretical interest).

sd1 presupposes a vowel-classification into short/medium/long. Roughly: the short vowels are those of pɪt, pet, pæt, pʌt, pɒt, pʊt, also ə, and also those of ˈtɪi fə ˈtʊu *if* unstressed/written singly (as in hu ˈɪz ʃi). Long vowels are those of dɔɔtə hɜɜtɪŋ faaðə (*if* stressed/written double) and meəri fɪərʊŋ [ɪz] fjʊəri. All other vowels are medium. sd2 assumes placing of syllable-boundaries. Rule: earlier rather than later, e.g. səkˈsɪi-dɪd| ɪn ˈmeɪ-kʊŋ| ðə ˈtræ-və-lə (except in words like mɑɑs-tə, which go like ɑɑf-tə). sd3 sign=form ↔ meaning criteria and sd4–5 terms/concepts were explained above.

4. THE NORTH WIND AND THE SUN, transcribed, recorded, timed in moras by SD1–4 and measured in csecs in Digidesign. The recording (mp3) is on www. linguavox.nl.

Locution/breathgroup A

10	32		24		14	7	42		13	23	18	23		21		12	8		29	27		15	9
1	6		5		2	1	5		1	2	3	3		2		2	1		3	3		2	1

ðə 'nɔːθ 'wɪnd‖ ənd ðə 'sʌn‖ wə dɪs'pjuutɪŋ| .wɪtʃ wəz ðə 'strɒŋgə‖ .wen ə

23	9	13		25		8	40		26		13	11	29		44						588csec
2	1	2		4		1	5		4		2	1	6		7						78m

'trævələ| ¸keɪm ə'lɒŋ‖ 'ræpt| ɪn ə 'wɔːm| 'kləʊk#

Loc B

25	12	33		14	9		23		9	29		16		27	18	18		21	20	11		19	7	15		25
2	1	5		2	1		4		1	6		2		3	3	2		3	3	1		2	1	2		4

.ðeɪ ə'griid| ðət ðə 'wʌn| u 'fɜːst| sək'sɪdɪd| ɪn 'meɪkɪŋ| ðə 'trævələ| ¸teɪk

18		29		22		17	12	16		18	22		36	12		16	8	18	22		617csec
2		4		5		2	1	2		2	3		3	2		2	1	2	4		83m

ɪz 'kləʊk ¸ɒf‖ .ʃəd bi kən'sɪdəd| 'strɒŋgə| .ðən ði 'ʌðə#

Loc C

29	7		37		27			31	19		28	14	9	40		15	9		36	11	34		8
4	1		5		4			5	2		6	2	1	5		2	1		6	1	5		1

'ðen| ðə 'nɔːθ ¸wɪnd| 'bluu| əz 'haad| əz i 'kʊd‖ .bət ðə 'mɔːr i 'bluu‖ ðə

29		32	19	17	11		23	9	12	30		18		29		8	31		31		10	11		49		8
2		4	2	2	1		2	1	2	5		2		5		1	4		4		2	2		6		1

mɔ 'kləʊsli| .dɪd ðə 'trævələ| 'fəʊld| ɪz 'kləʊk| ə'raʊnd ɪm‖ .ən ət 'laast| ðə

40		32		25	21	13	9	66					932csec
5		4		4	3	1	1	6					123m

'nɔːθ ¸wɪnd| 'geɪv ʌp| .ði ə'tempt#

Loc D

31		9	40		27	25		30	23		14	8	24	7	12	20	14		20	11	12	19	15	17		41	420csec
4		1	4		3	4		5	3		2	1	3	1	2	2	1		2	1	2	3	3	2		7	56m

'ðen| ðə 'sʌn| 'ʃɒn aʊt| 'wɔːmli‖ ən ɪ'mɪidɪət.li| ðə 'trævələ| 'tʊk ɒf| ɪz 'kləʊk#

Loc E

13		37	10	48		35		17	11	40		9	17	39		14	9	41
2		4	1	6		4		2	1	5		1	2	5		2	1	4

ənd 'səʊ| ðə 'nɔːθ| 'wɪnd| wəz ə'blaɪdʒd| tə kən'fes‖ ðət ðə 'sʌn|

12 6   37 20 12 9 36   463csec
2   1   3   3   2 1 6   58m
wəz ðə ˈstrɒŋɡər| .əv ðə ˈtʊɑ#

grand total: 3029 csecs /398 moras

It is often notoriously difficult to determine by eye+ear syllable-boundaries within
3–4 csecs in intensity tracings, etc. Occasionally this matters, e.g. in Loc. E -ɡər| .əv,
where the 'good' tally 20:12 with 3:2 moras would have been a not-so-good 16:16 had
I drawn the boundary 4 csecs earlier. For the sake of consistency, all boundaries were
therefore drawn as late as acceptable. Out of 144 syllables, 117 then tally with the pre-
dicted 7±2 csec per mora, i.e. within 28% of 7 csecs. Of the remaining 27 syllables 18
mostly u-syllables tally within about 40%, which still seems acceptable. The 'extra'
duration of -tempt in C and sʌn in E can be 'explained' as inconsistencies in my per-
formance. The remaining 9 syllables are 3x strɒŋ-, 3x træ-, 40-50% longer (initial C's
underrated?) and wɔɔm, fɜɜst, hɑɑd, 35% shorter ('long' V overrated?); these pose a
problem but not enough (yet) to start tinkering with rules sD1-4.

Frankly, these results look rather too good be true. Similar measurements of (more)
spontaneous speech tend to present a far less neat picture. This may have to do with
my somewhat formal, 'consistent' reading, which should in any case be judged for
its acceptability. (The mp3 file may be freely downloaded.) Anyhow, I would regard
sD1–4 as a psychologically and therefore neurocognitively implausible calculus, no
more than a *first step* in tackling the timing-problem in language, and—for the time
being—a useful tool in teaching English phonetics.

5. TEACHING SYLLABLE DURATION. The teaching of timing-control (absent, to my
knowledge, from all linguistic and phonetic training outside the Amsterdam English
Department) is not much different to start with from the training given to a beginning
musician. Indeed we may begin with some tapping and ta-ta-ta-exercises *on a mono-
tone* as in Howard Shanet's *Learn to Read Music* (1956:41), e.g. (in our space-saving
numerical notation, using italics for rests) 2 2 11|3 12 |4 2 |2 4 |2 112 |113 1|111111|6 ||,
later followed by exercises such as:

- Say tatatatata… at equal intervals, about 5 or 6 per second. This is a 2-2-2…
  timing.
- Say taʔataʔataʔɑ… with the same timing. Omit the glottal stops: taataataa >
  4-4-4…
- Say (still on monotone) taʔaʔataʔaʔɑ… giving taaataaataaa… > 6-6-6-6…
  timing.
- Say 22242 tatatataata. Similarly with 24242, 22622, 62622, 24262, 24642.
- Say 2222 tatatata… Then tətə for every third ta, thus 22112211…
  tatatətətatatatətə…
- Say 222122-timing: tatatatətata. Also 242122, 22612, 24162.

- Say 21212121 tɑtətɑtətə…, Dropping t before ə > tɑə tɑə tɑə…>3-3-3-… timing.
- Say these timings: 22322, 32322, 12232, 12242, 12252, 12262. (And so on.)

Adding grouping, rapping and pitch markings to such tɑtɑtɑ-s, these may be demonstrated and practised together with rhythmically-melodically identical English locutions.

1 ˇ**4** | 2 1 ˇ**8** ˏ#	the ˇgift| of the ˇgab ˏ#
ˍ**4** | ˊ2**3** | 2 ˍ**6** ˏ// ˊ**4** | 2 2 ˉ**7** ˊ#	ˍjust| ˊfollow| your ˍnose ˏ// ˊsee| what I ˉmean ˊ#
ˊ2**2** | 2 ˍ**7** �û # ˊ2**2** | ·1 2 ˍ**8** ˏ #	ˊany| com ˍplaints û # ˊpenny| ·for your ˍthoughts ˏ#
ˍ**5** ˏ// ˇ**6** ˎ // ˇ**4** | 11 ˇ**6** ˏ#	ˇyes ˏ// ˇplease ˏ# ˇthanks| very ˇmuch ˏ#
ˇ3**2** | ˍ**4** | ˇ4**5** ˎ //1 ˍ**6** û #	ˇpractice| ˍmakes| ˇperfect ˏ// you ˍknow û #
ˇ2**2** |ˍ**6** ˏ# ˊ**4** 2 |1 ˇ**7** ˎ #	ˇsilly| ˍfool ˏ# ˇgives me| the ˇcreeps ˏ#
ˇ**4** | ˍ3**3** | 1ˌ**4** 1 ˍ**5** û // 2 ˍ3**5** û #	ˇjust| ˍbeating| aˌbout the ˍbush û // as ˍusual û #

6. PHONEME TIMING AND THE TIMING OF ARTICULATORY MOVEMENTS. One problem in teaching English is the difference between 'tʊʊ\|'pens// 'plɪiz# and 'tʊʊ\|'penz// 'plɪiz#, This is not just a matter of voiced vs. voiceless, but rather of timing ns and nz. The syllable-duration of both *pence* and *pens*, by our rules, is 5 moras here, so that clearly requires a statement of phoneme-timing within syllables. The following four FT or Phoneme Timing rules try to take care of that.

FT1 Syllable-final C (sequence) is short (appr. 1 mora for C, up to 1½ for sequence).
FT2 Allocate lengthenings (by sD3) to last phoneme other than b, d, g, dʒ, v, ð, z, ʒ.
FT3 Shortenings (by sD4) out of ditto, if unlengthened (by FT2) out of preceding phoneme.
FT4 Allocate left-over time to (Si)V: (a) minimum (less than 1 mora) to initial S(et), (b) minimum to V-margin (-ɪ, -ʊ, -i, -u, -ə, j-), (c) rest to V-nucleus.

(4)   a ˇbad\| ˇworkman ˎ //ˊalways\| ˉblames\| his ˍtools ˏ# 1 ˇ6\| ˇ54 ˏ// ˇ53\| ˉ5\| 2 ˍ7 ˎ # (æ=longV)
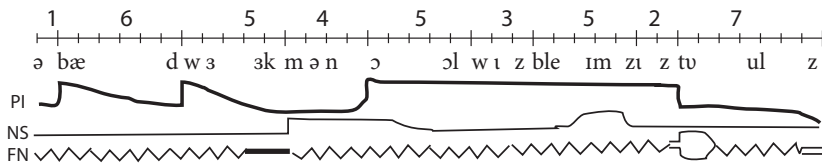
Procedure for tʊʊlz. FT1: write syllable-final lz right at the end of the 7 moras available. FT2: move l three moras to the left. FT3: does not apply to this syllable. FT4a: crowd tʊʊ to the left; FT4ab: move vowel-margin u as close as possible to l.

As can be seen, we have also used the opportunity in (4) to indirectly state the timing of PItch NaSality and FoNation movements by relating these to the phonemes (purely abstract, negative, relative points in the pattern, as we know) and syllables of the 'timed transcription'. Note that this does away with, indeed *denies,* the concept of 'phonetic segments'. For reasons of space the other seven parameters needed for a complete articulatory specification of this locution had to be left out, but the principle is the same. These are: airstream, postura (liprounding, velarisation, etc.), lip & tongue shape, jaw-movement, manner of articulation, vowel & consonant placing. The 'rules' for these are comparable to the following here applied for phonation:

FN1   Chest-register, moderate tightness (cum creak) raised larynx, always.

FN2   Glottal stop < (immediately before & during) p,t,k (sequences) in syllable endings provided that (i) the next phoneme is a C but not h , (ii) no f,θ,s,ʃ precedes.

FN3   Breath > (during & after) syll. initial p,t,k, but not following f,θ,s,ʃ in the same word.

FN4   Breath ⊥ (during) sequences of) f,θ,s,ʃ and all other p,t,k .

FN5   Whisper ⊥ (sequences of) b,d,g,v,ð,z,ʒ,h if followed or preceded by p,t,k,f,θ,s,ʃ, #

FN6   Whispery voice ⊥ all other h .

FN7   Voice elsewhere (i.e. tight, creaky, etc., by FN1).

7. CONCLUDING REMARKS. The theory of rhythm outlined above seems psychologically plausible, being largely in agreement with the work of Cooper and Meyer, and Fraisse. Its neurocognitive correlates are worth further investigation. Our views on phoneme timing and articulatory timing, too, seem more plausible neurocognitively speaking than the usual segment-by-segment statement of realisation/duration. This would be another interesting question for neuroscience. But I am less positive about my Syllable Duration calculus. Surely, this is not how one operates when one speaks! Unlike the psychologically and neurally plausible isochrony principle (which we had to reject as 'irrelevant' to prose), rules SD1–5 are counter-intuitive, no matter how simple, elegant or useful they may be. So perhaps we ought to be looking for something better.

Matell and Meck's (2000) article on short-term timing (rather forbidding for a simple linguist, unfortunately) proposes, for *all* mammals, a neural loop from the cortex to the striatum part of the basal ganglia to the thalamus and back to the cortex, with the striatum acting as a 'coincidence detector' between timings learnt with cortical patterns (say for words like 'scram' or 'fantasmagorically' in the case of the human mammal) and those actually being activated. As I understand it, the striatum does this by synchronizing the incoming neural pulses to start with and then waiting for the moment of maximum input to signal 'stop, time's up'. The article only discusses 'short-term' durations from 8 to 21 seconds and above, which is not altogether

the same as the welter of overlapping and sequential ultra-short 5 to 60 centisecond vocal timings we have learnt to control in our native tongues.

Fascinatingly, incredibly, it seems that (the millions of?) 'individual striatal spiny neurons have been estimated to have between 10,000–30,000 spines on their dendrites… Each of these spines is believed to receive input from a different cortical or thalamic neuron'. (Matell & Meck 2000:98). This looks like a rather complicated set-up, with most or all cortical neurons involved in speech production and reception directly connected to and monitored by the striatum. The implications for the description and teaching of rhythm and timing in language are far from clear as yet. Perhaps it *is* a good idea to chuck our syllable duration rules overboard and start all over again. There is still some work to be done.

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THE CONCEPTUAL MODEL OF DISTRIBUTIVITY

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THE ISSUES OF HOW TO INTERPRET the concept of Distributivity, which constructions to associate with it, what the place of this phenomenon is within a system of grammatical categories, and many other questions get quite different and sometimes contradictory answers.

Though the term Distributivity is widely used both in the study of quantification (in logic and in its application to natural languages) and in linguistics as part of grammar, what exactly falls under its jurisdiction is still debatable and differs from scholar to scholar and from grammar to grammar. The most widespread meaning associated with Distributivity can be interpreted roughly as singling out an individualized entity from within a set of entities. Logicians and also many linguists interpret the entities in question as individuals. But other linguists often associate these entities also with the activities/properties/states of individuals.

In this paper I discuss all the above issues. I analyse numerous cases of constructions which can be regarded as candidates for distributivity, scrutinize the question of the prototypical form of a distributive construction cross-linguistically, propose a description of the basic or primary distributive meaning, and separate primary distributive meaning (and consequently constructions) from secondary ones.

1.CONTROVERSIES AROUND DISTRIBUTIVITY. A textbook case of a Distributive construction is a construction with one of the universal quantifiers *each, every*, and sometimes *all* as in (1):

(1)   *Each/ every student wrote the test/ All students wrote the test.*
        John read each/every book on Shakespeare. John read all books on Shakespeare

But linguists single out a much wider diversity of constructions (quite different by form and even meaning) which they associate with Distributivity (Dolinina 1997, 1999). For example, the following constructions without any explicitly expressed universal quantifiers on a word level are identified by those who describe them as Distributive:

(2)   **Kabardian** (Colarusso 1992: 57)
        λʼə-qʼas   ø-y-a-śʼə-f
        man-EACH it-3-PRES-do-able
        Each man can do it.

(3)   **Russian**
       Ptic-y   s -lete-li-s'   *v   sad*
       Bird-PL:NOM (directions): PL→SG-fly-PAST:PL(AGR)-REFL in garden
       Birds flew (from different places) into the garden.
(4)   **Moses Columbian** (Kinkade 1977:149)
       łəq - łaq - lx   lx
       sit:SG-RDPL/DISTR-ACTIVITY   NON-SG/Ag
       Each (in a group) has a place to sit.
(5)   **Evenki** (Nedjalkov 1989:67):
       loko-   loko-t
       hang (smth)-   hang (several things separately and in different places)

Although linguists have some points of agreement on the data expressing Distributivity, they do not agree on its conceptual and grammatical interpretation. Depending on the data they address, some linguists interpret Distributivity either as an area of Nominal quantification (the same as logicians) or as an area of Aspectuality, because some cases of distributive meaning are marked by the contrast of Imperfective-Perfective forms. Consequently, some interpret Distributivity as quantification over entities (a variety of Nominal Number), while others interpret it as quantification over events—Event or Verbal plurality. Consequently the first group (e.g. Corbett 2000) situates Distributivity within the domain of Nominal Number, whereas the second situates it within the domain of Aspectuality (in the Slavic tradition as Aktionsarten—Isačenko 1960) or even more often leave it unidentified grammatically. Very often affiliation depends on the loci of marking. If the marking is on Nouns/NPs, as in (1), it is situated in the nominal domain; if on verbs, as in (2), in the verbal domain (see different affiliations in different articles in Bach et al. 1995).

2. CANDIDATES FOR DISTRIBUTIVITY. In order to generalise all the available data on Distributivity, it is possible to single out (by the parameter of meaning, because of the diverse forms exemplifying them) at least the four following types of constructions, which have been associated with distributivity. First are the distributive constructions, universally recognised as such, as in (1) and (6):

(6)   a. *Each/every child (everyone) was sleeping.*
       b. *Mary read each/every article on Distributivity.*

Some linguists (Choe 1987, later Gil 1995) call them Distributive-key constructions. The term is contrasted to what they call Distributive-share constructions, as in (7), which constitute the second type.

(7)   *Two men carried three suitcases apiece.*

The third type is Collective constructions, that is cases with the universal quantifier *all*, which some scholars (Gil 1995) consider a different type from distributivity but others do not.

(8)   *All children were sleeping.*

Fourth are whole-part constructions, often marked by a special morphological marker, as for example in Slavic languages:

(9)   a. Czech: *roz-řezat kládu*
                   DIST-saw log
                   'to saw a log' (into pieces)
      b. Russian: *raz- vesti- s'*
                   DIST lead   REFL
                   'to get divorced' (from each other)

The first type is universally recognized as genuine Distributivity. Some (Choe 1987, later Gil 1995) call such constructions Distributive-key constructions, as remarked above. This term is contrasted to what they call Distributive-share constructions. Distributive-share constructions are in the process of recognition as distributive constructions. They are discussed as such only by some scholars, but the tendency to treat them as distributives is increasing. The third and fourth types are under discussion. 'Collective' constructions, though widely discussed, are often excluded from the distributive domain. I do not myself agree with this position, though I realize that recognizing them as distributives depends on how the concept of distributivity itself is understood. Whole-part constructions are discussed differently in logic and in linguistics. Logicians do not associate them with distributivity, but linguists do. They are regarded as cases of Quasi-Distributivity (Dressler 1968, Xrakovskij 1997).

    In the present study I concentrate predominantly on the first type of distributive constructions (cf. [1] and [6]), because they are the clue to understanding distributivity in general and are the only type of distributive construction that may be central or prototypical. Because of space limitations, I only discuss the peculiarities of other constructions very briefly.

3. PROTOTYPICAL DISTRIBUTIVE CONSTRUCTIONS. The problem here is whether it is possible to speak at all about the very existence of prototypical distributive constructions. Psychological prototypicality is monolingual and monocultural. Typological prototypicality has never been defined. So what would prototypicality be in this case? Would it refer to a type of construction which is central to all languages to express distributive meaning in general? Then such a construction should be represented in all languages and be the first choice among other, more peripheral distributive constructions. Can a construction be considered to be prototypical if there are languages which do not have this type of construction at all? More specifically, should the term

prototypical refer to a specific morpho-syntactic form, based on the usage of universal quantifiers *each/every* as in (1) and (6), or can it be applied to other morpho-syntactic forms of constructions as in (2), (3), (4), etc.?

Usually in quantification-related literature constructions with the universal quantifiers *each/every* in Determiner position are recognized as clear cases of Distributivity. The meaning of these constructions can be described as in (10).

(10)   Prototypical distributive meaning refers to cases when one of the arguments of the proposition/predication is multiple/plural, and members of this plurality are presented as individualized.

In cases like (1) and (5) individualisation is marked by special quantifiers *each/every,* etc. having the function of a DET within NPs. Linguistic and especially cross-linguistic data show the issue of prototypicality based on the form of the construction does not work. In many languages this meaning of individualization within a group is marked in a completely different way.

Let us consider the most salient types of construction in which distributive meaning is marked as a dominant pattern in a way other than by the use of Determiner quantifiers.

4. SLAVIC LANGUAGES: TWO PROTOTYPICAL CONSTRUCTIONS? In many languages, equally as common as *each/every*-constructions and sometimes the only possible constructions, are the ones where the meaning of Distributivity is expressed by verbal marking of the meaning (cf. [9]). Slavic languages are the best illustration, because they have not only a sophisticated system of distributive verbal prefixes but also allow all types of arguments to undergo distributive interpretation. This marking mechanism makes possible compact constructions which are much more elegant than those with NP-attached quantifiers, as is seen from the translations in (11).

(11) a. Russian:
     Butylk-i   *po-pada-li*   *s*   *polk-i*
     Bottle-PL.NOM   DISTR-fall-PST.PL   from   shelf-GEN
     The bottles fell from the shelf (each separately, chaotically, during a short
          period of time).
   b. Ukrainian:
     Vona   *pere-bil-a*   *uves'*   *posud*
     SG.NOM   DISTR-break-PST.3SG.FEM   all   dish.COLL.ACC
     She broke all the dishes (each separately, within a certain period of time).

In comparing the meaning of such constructions with the description of distributive meaning as formulated in (10), one can single out certain differences. Such constructions presuppose the individualization of elements of a multiple argument, but that individualization refers not so much to individuals as to individualized activities of the

members of a group representing a multiple argument. Under this interpretation of Distributive semantics we have to reformulate the meaning of Distributivity as (12).

(12)   Distributivity is quantification not only over individuals within a group, but also over the action of individuals. So it has a dual quantificational value: it is quantification over individuals and over events.

As mentioned above, Slavic languages have both types of constructions i.e. with nominal and verbal marking. Sometimes these constructions have equal value and are interchangeable (especially when the multiple arguments are Agentive Subjects or Patient Direct Objects). But in other cases—in a wide variety of locus expressions—verbal marking is either highly preferred or the only possible marker of distributivity. So in cases like Slavic, which type of morpho-syntactic construction can be regarded as prototypical? The answer can be either both types of constructions, or neither of them. What follows from this is that the form of a construction should not be considered as the identifying parameter of a prototypical construction. The concept of prototypicality refers only to the meaning delivered by the construction. This position is strengthened by how Distributivity is expressed in languages of another type—for example the so-called pronominal-argument languages, to which we now turn.

5. LANGUAGES WITH PRONOMINAL-ARGUMENT STRUCTURE: DIVERSITY OF PROTOTYPICAL CONSTRUCTIONS. Another challenge to what to consider a prototypical distributive construction comes from research in a wide number of indigenous languages of the Americas, Australia, Siberia, etc. (Bach et al. 1995, Dressler 1968, Xrakovskij 1997). This research has shown that, despite claims that constructions like those in (1) or (6) are common to all languages (Barwise & Cooper 1981), many languages do not have such constructions at all. In this connection E. Jelinek (see discussion in Bach et al. 1995) argued that the mode of marking quantification (including Distributivity—ID) is not universal, but tends to be defined by a language type. She proposed to make distinctions between languages with noun-argument structure and pronominal-argument structure. In languages of the first type argument positions are normally actualized by nouns, and languages as a rule have Determiners. Such languages tend to express quantification by means of Determiners just as predicted in Barwise and Cooper (1981). Languages with pronominal-argument structure, that is ones where valency relations are established by pronominal/affixal reference, such as American and Australian indigenous languages (analysed in Bach et al. 1995), favour different patterns. Jelinek's prediction that there are ways to mark quantification other than by means of Determiner-Quantifiers can be extended to many indigenous languages worldwide. It must be noted, though, that her prediction is only a tendency. As discussed in section 4, Slavic languages and some other languages of the noun-argument type (e.g. Georgian) widely use verbal marking of Distributivity.

    Available data on non-Determiner actualization of distributivity allow me to single out at least three different models of expressing distributivity.

The first model is characteristic of languages without Determiners; quantifiers in them are never Determiner but function as arguments of the verb in the syntactic structure of the sentence as in (13), see also a similar function of the quantifier in (15):

(13)   **Mohawk** (Baker 1995:21)
         John   akwéku wa   -shakó   -kv-   ʻ
         John   all   FACT   -M:SG:SB/FII -see-   PUNC
         John saw everyone/all.

Similar constructions generally exist in nominal-argument languages, as in the translation of example (13), but in them it's a peripheral, not a central way of expressing Distributivity.

The second possibly prototypical model of marking Distributivity is represented in a wide variety of languages, especially in polysynthetic ones where arguments are incorporated as (pronominal) affixed into the verb. I would call them strong pro-argument languages. These languages favour verb-attached marking of Distributivity, as discussed in Bach, Dressler, Xrakovskij, etc. (It must be stressed though again that this model occurs not only in pro-argument, but in numerous noun-argument languages.) Distributivity can be marked here by various modifications of the verb: verbal affixation (14)a, reduplication (14)b, Auxiliaries (14)c, etc.:

(14) a. **Aleut** (Golovko 1997:79)
         huzu-ngis   ayxaasi -ngis   ayxa   -la-na-s
         all-3PL:POSS boat   - 3PL:POSS go:to:sea -DIST-PAST-3PL
         All their boats went to sea (each of them and one after another).
      b. **Cree** (Horden 1934:56)
         mā kiw   →   mu-mākiv (ma-mākiv)
         'he gives' →   'he gives distributively'
      c. **Vietnamese**
         tôi xem   hêʼt   phim nāy đêʼn   phim   khác
         I   watch FINISH movie this REACH/TO movie another
         I watch one movie after another.

The third possibly prototypical model realizes the Distributive meaning by a specific contrast in marking the co-existence of singularity and plurality. Singularity represents the idea of individualization and plurality represents the idea of a group involved in action. Two subtypes of constructions can be an example of this phenomenon. One subtype is illustrated by cases like (15)a and b:

(15) a. **Lakhota** (Falz 1995:291)
         Wakʼaŋyeja jyohila wayawa pi
         Child   each   3:read   PL
         Each child attends school

   b. **Lakhota** (Falz 1995:293)
   John   wic'aśa jyohila ob   wote
   John   man   each   with:PL 3:eat
   John ate with each man

Here the idea of individualization of the member of the multiple argument—a group of children in (15)a and a group of men in (15)b—is expressed by a quantifier *jyohila* 'each', whereas the notion of the plurality/group and plurality of actions involved is represented by plural marking on the predicate or preposition. The combination of these two mechanisms creates the distributive reading.

   Another subtype has an opposite type of marking singularity and plurality, as in (4), which I repeat here as (16) for convenience:

(16)   **Moses Columbian** (Kinkade 1977:149)
   łǝq - łaq - lx   lx
   sit:SG-RDPL/DISTR-ACTIVITY   NON-SG/Ag
   Each (in a group) has a place to sit.

The singularity of each individual is actualised by means of selection of a singular verb-stem, whereas multiple Ag is represented by a Plural pronoun.

   So there is no such entity as a universal form of construction which can be regarded as prototypical cross-linguistically. Only a certain type of meaning associated with prototypical Distributivity can be universal.

6. BASIC DISTRIBUTIVE MEANING. In summary, the variety of constructions used as a primary way of expressing Distributivity in diverse languages makes it clear that constructions differ strongly in the forms by which they actualize Distributivity. Consequently it is impossible to choose any of these forms as prototypical. But all these constructions (the formal typology of such construction can be evidently widened, but I doubt that the meaning will change) are united by salient common semantic features, which permit us to propose a description of the prototypical meaning which constitutes the essence of Distributivity. The formulation of such a meaning must on the one side separate Distributivity from ordinary Plurality. This is important because Distributivity always presupposes the existence of a multiple argument or a multiple circonstant (Locative, Temporal, etc.). On the other side it must separate the prototypical or rather basic Distributivity from the other candidates for Distributivity described in Section 1, which have a more complicated meaning.

   The salient feature of Distributivity as compared to other quantifications over individuals (as in the case of ordinary Plurality) is that its meaning is available only on the level of a proposition/predication, not on the level of an argument (NP) alone. Distributivity conceptually presupposes (as is clear from the meanings implied by the prototypical constructions analysed above) both a group of individuals and actions/properties attributed to these individuals resulting in a set of events. So

conceptually, distributivity is not quantification over individuals only, but over both individuals and events or situations of which they are part. The distributive meaning, unlike the meaning of cardinal-related quantification, is impossible when this condition is not met. Constructions with pure existential predicates/copulas are impossible outside of context, as in (17) :

(17)   a. *_This is each book,_ but only
            He read each book; each book is interesting.

or

        b. *_There was every boy_, but only
            Every boy knew the answer.

There is one more aspect of the meaning of Distributivity. It presupposes not just a multiple argument, a group of individuals, with an undefined boundary, but it refers obligatorily to the boundedness/wholeness of this group. If it is claimed that each/every member of the group is involved in some action/state/property, it automatically means that all members of this group are involved. This raises a question about the status of collective constructions: are they a separate type of Distributivity or a subtype of prototypical Distributivity?

7. COLLECTIVE CONSTRUCTIONS. This term refers to constructions with the universal quantifier _all_ and also includes cases of floating quantifiers, as in (18) a, b and c:

(18)   a. _All the children are sleeping._
        b. _The children are all sleeping._
        c. _John read all the articles on Distributivity._

Such cases are often either explicitly (e.g. Vendler 1967:72–76) or implicitly (numerous grammars) excluded from the domain of Distributivity, presumably on the grounds that they do not express the concept of individualization strongly associated with the meaning of Distributivity. In such an interpretation the meaning of Distributivity is reduced to individualization of the members of a certain group represented by a multiple argument. This interpretation is supported by reference to how real Distributivity is marked. Gil (1995) claims that real Distributivity is marked in a specific way. It represents a unique case when plurality (a multiple argument) is marked as singularity both in the NP and in agreement on the verb:

(19)   _Each child_ (SG) _is_ (SG) _sleeping._

Appeal to this particular pattern of marking as grounds for singling out Distributivity is not supported by cross-linguistic data, since it is not present in many languages,

as in (15) and (16). Some languages do not even have separate universal quantifiers equivalent to *each* and *all*. The marking pattern is based on the contrast of explicitly marked singularity and plurality.

On the semantic side, the meaning of Distributivity is not available if only part of the group is individualized in its actions. Let's consider the following examples:

(20)   *There were five men on the shore, but only three men got into the canoe.*
         *All men on the shore got into the canoe/ *Each man got into the canoe.

All and *each* cannot refer to the group of three men in this context, only to the full group of five.

The prohibition is due to the fact that *three* is not a full set in this context. *All* would be possible only if the context were changed in such a way that the whole set of members expressed by a cardinal number is covered by *all*. Similar restrictions define the behaviour of *each*. It can be used only in a context satisfying the condition that the cardinal set is closed/whole. So both *all* and *every* are semantically marked in comparison with cardinal plurality: *all* refers to a fully closed set of entities, *each* individualises the members of the closed set. So both (not only *each* as claimed in Gil) are marked semantically in comparison with cardinal numbers. Thus they are both portmanteau entities with a compositional structure which implies three components—[PL + wholeness + individualization]. Constructions with *each* emphasise as a dominant component individualization, constructions with *all* emphasise as a dominant component wholeness. Constructions like (15) and (16) emphasise the contrast between individualization and the PL of a group. But all of them realise one and the same set of meanings. So I suggest that constructions with *all* are a subtype of a prototypical Distributivity, since they realise the same basic distributive meaning.

8. BASIC AND NON-BASIC DISTRIBUTIVITY. The description meaning associated with a set of prototypical constructions can be widened from the descriptions in (10) and (12) in (21).

(21)   Basic Distributive meaning includes the following components: (1) a proposition with (2) a multiple argument representing a group of individuals, (3) all members of which are (4) individualized, in respect to (5) individualization of their properties/activities.

This meaning can be realised by a number of different constructions (see Dolinina 1999), of which universal quantifiers are only one of many available marking patterns. So there is no such entity as a universal form of construction which can be regarded as prototypical cross-linguistically. The only thing that can be universal is a certain type of meaning pattern, which is realised by all such constructions, all of which can be characterised as Distributive-key constructions.

Distributive-Share constructions represent from this perspective a non-primary meaning of Distributivity, which always refers to only one multiple Argument, but a more complicated case with two multiple arguments. The meaning of the construction reflects relations between actions/states of members of these multiple arguments, as in (7), and also in (22):

(22) a. **Korean constructions with -*ssik*** (Choe 1987: 45)
     emma-ka   *[ai-tul]-eke*   *[phwungsen-hana-ssik]-ul*   *sacwu-essta*
     mama-NOM [child-PL]-to [balloon-one-D:SH]-ACC   bought
     Mama bought each child a balloon.
   b. **Russian (and all Slavic) constructions with the preposition *po-***
     Passažir-y   *nes-li*   *po*   *dva*   *chemodan-a.*
     Passenger-PL:NOM carry-PA:PL D:SH two-ACC suitcase-SG:GEN
     Passengers carried two suitcases apiece/Each passenger carried two suitcases.

Whole-part constructions (linguists call them *Quasi-distributive* or *Dispersive Distributive*) exemplify another deviation from the basic meaning of Distributivity. They are built not around a multiple argument per se, but around an argument which has the meaning of an entity which can be either partitioned, as in (9), or described as a space with multiple locations, as in (23).

(23) **Russian:** *Zemľa po-treska-la-s'*   *ot*   *zhary*
                soil   dist-crack-past.perf-refl from   heat
                The soil cracked/developed cracks (all over) from heat.

These constructions can be considered as a metaphorical extension of a concept of a multiple argument, and consequently of basic distributivity.

9. CONCLUSION. Summarising the variety of constructions which are used as the primary way of expressing Distributivity in diverse languages, it is clear that constructions differ in their forms. Thus, it is impossible to choose any of these forms as a prototypical one. But all these constructions are united by salient common features, which allow us to propose a description of the prototypical (basic and primary) meaning which constitutes the essence of prototypical Distributivity.

   One of the points missed in the logical interpretation of Distributivity is the fact that this meaning is available only on the level of a proposition/predication, not on the level of an argument (NP) alone. Distributivity conceptually presupposes relations between two domains: a group of individuals and properties/actions/events attributed to these individuals. Therefore, Distributivity is quantification not just over individuals, but over actions as well, and consequently has a dual nature, and the meaning of Distributivity is available only on the level of a proposition. Distributivity differs from ordinary (cardinal-type) quantification in that it refers to a closed-group plurality. Hence the quantifiers *each* and *all* always represent one and the same

group, looked at from different perspectives—either from inside, as a set of its components, or from outside, as a boundary of this set. Consequently constructions with these quantifiers realise one and the same basic meaning of primary Distributivity as formulated above, so collective constructions exemplify the same primary Distributive meaning as the *each*/*every*/etc. types of prototypical constructions discussed earlier. Primary Distributivity differs from more complex cases, such as Distributive-Share and Whole-part constructions, in that the latter realise not only the meaning of basic Distributivity, but additional meanings.

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PROMISES AND PREDICTIONS: A REVISED
MODEL-THEORETIC APPROACH

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MODEL THEORY, as applied to the semantics of natural language, is a formal method of showing, using set theory, how language connects to the real world. A very useful introduction to this approach to natural language semantics suggests that a simple model theory account should be able to show why 'the sentence *I love you* when spoken by A to B is true in a given situation just in case the sentence *You love me* would be true in a situation exactly the same except that B is speaking to A' (Dowty et. al., 1981: 139). But consider the following:

(1)   I promise you I will be here tomorrow.
(2)   You promise me you will be here tomorrow.
(3)   Sentence 1 when spoken by A to B is true in a given situation just in case sentence 2 would be true in a situation exactly the same except that B is speaking to A.

This paper presents a revised model theory approach that uses the theory of the decompositional sense structure of propositions (Katz 1977) to account for our hesitation about asserting sentence 3. The approach presented here extends the sense structure theory of meaning in order to make the language-world connection, and it revises the model theory account to include other satisfaction conditions in addition to truth conditions so that it can handle sentences like sentence 1, which do not appear to be truth valued.

1. THE THEORETICAL BACKGROUND. At the beginning of his very influential little book, Austin (1962) points out a notable distinction between sentences like those in (4)a–c on the one hand, and sentences like those in (5)a–c on the other:

(4)   a. I promise to write you a letter.
        b. I order you to take a seat.
        c. I name you 'Rusty'.
(5)   a. I promised to write you a letter.
        b. I ordered you to take a seat.
        c. I named you 'Rusty'.

The difference that Austin noted was, of course, that while the sentences in (5) could be either true or false, the sentences in (4) couldn't. Austin referred to the sentences in (4) as performatives because they are used to do things, and to the sentences in (5) as constatives because there are used to state that some situation is or was the case. After setting up this distinction between these two categories of sentences, including presenting a list of performative verbs, Austin looked for a set of grammatical criteria that would predict the difference between constatives and performatives. The grammatical features that he initially came up with for the performative sentences included first person singular, indicative, and present tense. However, Austin soon found what he considered to be counterexamples to his initial distinction between constatives and performatives. For example, he considered sentences like (6):

(6)   There is a bull in the field.

Austin noticed that a sentence like (6), which his initial distinction would mark as a constative, could be used under the right circumstances for a variety of functions, including the giving of a warning, in which case it would have the characteristics of a performative. Considerations of this type led Austin to give up his search for grammatical criteria to distinguish between performative and constative sentences and to conclude instead that all sentences had the potential to perform certain kinds of acts, namely his concepts of locutionary, illocutionary, and perlocutionary acts.

Katz 1977 examines Austin's initial distinction between constatives and performatives and his reasons for abandoning it. Using developments in linguistics growing out of the work of Chomsky, particularly the competence-performance distinction, Katz begins his study by attempting to spell out the way in which a pragmatic component of a theory of the meaning of sentence tokens would work, using the following formula:

(7) $PRAG(D(S_i), I(C(t))) = \{R_1, \ldots, R_n\}$

What this formula says is that such a pragmatic component, PRAG, is a function that takes as its arguments a grammatical description of a sentence type, $D(S_i)$, and information about the context of the use of a sentence token, $I(C(t))$, and produces a set of readings representing the meaning of the sentence token on the occasion of its use, $\{R_1, \ldots, R_n\}$[1]. For example, in the case of Austin's consideration of sentence (6) as being used to give a warning, an application of the PRAG function would take a grammatical description of the sentence type and information about the context of the use of the sentence token as arguments to produce the reading of the token as a warning. The grammatical description of the sentence type would account for (6) as making a claim about the presence of a bull in the field, a claim that could be either true or false. But given the additional information about the context—two friends in a strange field, one of whom is suddenly confronted by a fierce-looking bull—PRAG renders this use of (6) as a warning to the other friend. From considerations like

these Katz concludes that Austin abandoned his division of sentences into constatives and performatives prematurely for lack of a proper competence-performance distinction and because he tried to find syntactic rather than semantic criteria for the distinction. Katz then proceeds to develop a formal semantic distinction between constative and performative sentence types on a reading based on his decompositional theory of the senses of sentences. According to this theory, the reading for the sense of a proposition has in it representations of both the converted condition and the propositional content of the proposition. The converted condition spells out what situation in the world needs to obtain in order for the proposition to be satisfied. The propositional content is the sense structure that (4)a shares with (5)a, (4)b with (5)b, and (4)c with (5)c. Briefly and informally the essential features of Katz's formal definition of a performative proposition can be paraphrased as follows:

> **Definition 1**: The reading of a performative sentence type has a component that specifies a sentient agent doing something that has a nature and a purpose. The nature of the agent's act is physical—namely the articulation of a proposition that carries information—and also psychological—namely the intention of the agent to thereby try to get the addressee to understand this proposition. The purpose of the act depends on the particular performative verb used. For the proposition to be performative the agent reading must be the concept of the speaker of the sentence, and the time of the act must coincide with and be restricted to the speech point of the sentence[2].

Again informally, constative or assertive propositions can be defined here as propositions whose readings fail to meet one or more of the requirements for being performative. Katz, of course, spells out a formal definition of assertive sentence types. Our (5)a–c sentences fail the requirement that places the time of the act as coinciding with the speech point of the sentence. On the other hand, our (4)a–c sentences meet all of the requirements in definition 1 for being performative on a reading of the sentence type. In each case, of course, the purpose of the performative proposition is different: in (4)a the purpose is to assume responsibility for committing the agent to a future act and so comes under the category of an obligative; in (4)b it is to get the addressee to do something and comes under the category of a requestive; and in (4)c the purpose is to confer a name on the addressee, and comes under the category of a stipulative. The illocutionary force in each of these performatives converts the propositional content into a converted condition, the condition under which the proposition is satisfied in the world. This converted condition varies with the purpose concept in the corresponding reading. Obligatives like (4)a have a fulfillment condition, requestives like (4)b have a compliance condition, and stipulatives like (4)c have a nomenative condition. Of course, assertive propositions like those expressed by the sentence types in (5)a–c have truth conditions.

Katz's theory can be seen as an attempt to reconcile two conflicting trends in the philosophy of language as it pertains to theories of meaning, especially the

meanings of performative sentences. One trend, epitomized in the speech act theory of Searle, tries to account for meaning directly in terms of language use and avoids a sharp semantics-pragmatics distinction (Searle 1969). For example, Searle (1976) has claimed that even syntax is not a formal system and has rules of language use (Katz 1977: 224)[3]. The competing effort, epitomized by Lewis 1970, sees meaning in terms of truth conditions and relies on logical theory to arrive at a formal account of meaning. For example, Lewis argues that even imperatives like *Be late!* can have truth conditions (Katz 1977:169). An example of a more recent formal account of one category of performative sentences is James Higginbotham's account of the semantics of questions. Higginbotham concedes that questions do not have—or at least do not appear to have—truth values. The theory that he sketches for the meanings of questions is consistent with this concession, but only because the extensions of questions are partitions which are sets of sets of propositions. In the simplest case, that of a yes/no question, the partition can be thought of as consisting of the positive and negative responses to the question (Higginbotham 1996: 371). In Katz's theory, on the other hand, questions have answerhood conditions by virtue of the kind of purpose concept in their readings. Since the purpose of a question is to elicit an answer from the addressee, the extension of a question can be seen as a set of possible answers. The outcomes of Katz's and Higginbotham's theories about questions, at least in terms of their extensions, are similar, but their starting points are very different, one beginning with the decompositional sense structure of the question, the other with the regimentation of the natural language question into a logical formula.

While Katz did not himself provide a model theoretic account of the reference of performative propositions, Katz 2004 provides a series of 'referential correlates' that are intended to provide constraints on the construction of an appropriate model-theoretic semantics:

> Given an autonomous theory of sense together with referential correlates for each of the sense properties and relations, a model-theoretic semantics of natural languages acquires a significant range of new constraints on assignment of extensional structure to expressions and sentences. These constraints, which I have [referred] to as 'referential correlates', explain the contribution of the sense structure of a natural language to its referential structure (Katz 2004: 202).

According to Katz's autonomous theory of sense, sense mediates but, unlike Fregean intensionalism, does not determine reference. Sense is necessary but not sufficient for reference. Thus, certain expression types do not have type extensions because they require information from the context of use to fix an extension. Four examples of this that will concern our little model here are the first and second person singular pronouns *I* and *you*, the locative adverb *here*, and the temporal noun *tomorrow*. All of these indexical expressions require information from a context to fix a reference and are therefore non-plenomic, meaning that they do not have type reference. So in attempting to construct a model-theoretic account of the type extension of the

performative sentence type in (1) and the constative sentence type in (2) we have to find a way to pass over the sense structures of these expressions to the pragmatic component, PRAG, to await information from the context of a use of one of these sentences to fix the extensions of these deictic expressions. Even, however, where an expression has a type reference, this does not necessarily fix its token reference, because information from the context of use might lead to a reinterpretation of the sentence, as for example in cases of the non-literal uses of expressions or in the case of ambiguous expressions that must be disambiguated by the use of contextual information. For example, the simple present tense forms of English verbs have a possible reading of the historical present that is often used to denote an event in the past. So (2) might easily be used to mean something like (8).

(8)   You promised me that you would be here tomorrow.

In addition, the manner of expressing a sentence, such as making use of pauses or certain intonation patterns, can affect the token reference. So again (2), said with a pause and an appropriate gesture after *You*, might best be construed as a command, as in (9) with stage directions:

(9)   You [pause, pointing to his friend] promise me that you will be here tomorrow.

2. THE MODEL. Moving on to our model theory approach to the extensions of (1) and (2), let's begin with the assumption that the sense of *promise* has in it the concept of an act with the purpose of the agent assuming the obligation for bringing about the situation denoted by the complement sentence after *that* at a time in the future. However, for simplicity we will write our representation of the sense of *promise* as a three-place predicate: [PROMISE (x,y,z)]. We use this as an abbreviation for the semantic marker representation that we provide later. We follow Katz in relying on Chomsky's *Aspects* model of syntax for his categorized variables, so that [NP,S] picks out the subject, [NP,VP,S] picks out the object, and [S,VP,S] picks out the embedded *that* clause.

We analyze the syntactic structures of (1) and (2) in part by using the following set of phrase structure rules:

(10) a. S → NP VP
       b. VP → Aux$_{tense}$ VP$_{be}$/VP$_{promise}$, (where '/' means 'or')
       c. VP$_{promise}$ → V$_{promise}$ NP S$_{comp}$
       d. S$_{comp}$ → that S
       e. VP$_{be}$ → V$_{be}$ PP PP
       f. PP → P NP$_{adverbial}$, (see McCawley (1988) for a rationale for this 'adverbial NP as PP' approach)
       g. NP → I, you, me
       h. NP$_{adverbial}$ → here, tomorrow
       i. P → Ø

    j. $Aux_{tense} \rightarrow$ Present, will
    k. $V_{promise} \rightarrow$ promise
    l. $V_{be} \rightarrow$ be

We begin our model by providing the following extensional interpretations of the lexical items in our sentences. What we are doing here is providing a formal representation of the way in which the words in our sentences connect to the world. We follow Chierchia and McConnell-Ginet (henceforth CM-G 2000: 75) by using $[[\beta]]^v$ to indicate the semantic value of the expression β in circumstance v. We follow Katz's meaning of the verb *be* as indicating the application of the predicate to the subject (Katz 1977: 162). We use the abstract tense markers PRESENT, PAST, and FUTURE for the representations of the verb tenses in our sentences. We use $t^{(0)}$ to represent the speech point, $t^{(+n)}$ to represent a time after the speech point, and $t^{(-n)}$ to represent a time before the speech point. The expansions are given in (11).

(11) a. $[[I]] = [[\text{the speaker}]]^v$
      b. $[[me]] = [[\text{the speaker}]]^v$
      c. $[[you]] = [[\text{the addressee}]]^v$
      e. $[[here]] = [[\text{the speech location}]]^v$
      f. $[[tomorrow]] = [[\text{the next day}]]^v$
      g. $[[promise]] = [PROMISE(x,y,z)]^v$
      h. $[[will]] = [[\text{future}]]^v$

Next we provide interpretive rules for all the syntactic constituents of our two sentences, staying as close as we can to the *Aspects* version of English syntax (used by Katz 2004) and following a top-down approach. We follow essentially the approach of CM-G (2000: 158–68) in providing a model-theory interpretation of a fragment of English, here just enough of a fragment to handle (1) and (2). The double brackets can be read as 'the extension of', '1' means 'true', 'iff' means 'if and only if', 'ϵ' means 'is a member of', and a structure of the form P(x) means the predicate P applied to the argument x. The set of semantic rules that provide the extensional or referential interpretation of the constituents produced by each of our phrase structure rules is given in (12):

(12) a. i. $[[NP_i\ VP_i]] = 1$ iff $[[NP_i]] \epsilon [[VP_i]]$ when the verb in VP_i is not performative
        ii. $[[NP_i\ VP_i]] = [[VP_i]]\ ([[NP_i]])$ when the verb in VP_i is performative
      b. $[[[Aux_{tense}\ VP]]] = [[VP]]$ in the $[[Aux_{tense}]]$
      c. $[[[_{VP}V_i\ NP_i\ S_i]]] = \lambda x\ [[[V_i]]\ (x, [[NP_i]], [[S_i]])]$ [4]
      d. $[[[_s\ that\ S_i]] = {}^\wedge [[S_i]]$ = the intension of S_i = the set of <world, time> pairs in which S_i is satisfied
      e. $[[_{VP}V\ PP\ PP]] = \lambda x[[[[PP]]\ [[PP]]]\ (x)]$
      f. $[[[_{PP}P\ NP]]] = [[NP]]$
      g. $[[[_A\ B]]] = [[B]]$ for A, B of any category

h. If A is a lexical category and β is a lexical item, then $[[[_A \beta]]] = [[\beta]]$

Rule (12)h will get us to the leaves of our syntactic tree. So at this point we should be able to use these rules in a systematic way to arrive at the first major stage in our derivation of the extensions of our sentences. In fact, at the end of the derivations of (1) and (2) we get the following representations:

Sentence (1)
PROMISE
$([[\text{the speaker}]]^v , [[\text{the addressee}]]^v, \text{that}[[[\text{the speech location}]]^v [[\text{the next day}]]^v] ([[\text{the speaker}]]^v)) \text{ at } t^{(0)}$

Sentence (2)
PROMISE
$([[\text{the addressee}]]^v, [[\text{the speaker}]]^v, \text{that}[[[\text{the speech location}]]^v [[\text{the next day}]]^v] ([[\text{the addressee}]]^v)) \text{ at } t^{(0)}$

Because the first of the three arguments in the predicate PROMISE is the agent argument, and because the time of the promise in each representation is $t_{(o)}$, the speech point, we see already that sentence (1), based on definition #1, is performative, while sentence (2), since the agent is the addressee, is constative. The third argument of the predicate PROMISE in (1) and (2) is itself a proposition, corresponding to the *that*-clause in each sentence, and can be thought of here as the application of the place and time coordinates to its own argument, the speaker in (1) and the addressee in (2). Of course, we need to use the sense structure of the main verb *promise* to work out the contribution of that structure to the meaning of our two sentences. We turn to that now.

The semantic marker for the verb *promise* is given in (13) (Katz 1977:216, 142).

(13)   (ACT$_{[NP,S]}$ (NATURE
         (PHYSICAL (PROPOSITION))
         (PSYCHOLOGICAL (INTENTION (UNDERSTANDS)$_{[NP,VP,S], PROPOSITION}$)))
         (PURPOSE ((Assumes Obligation for)$_{[NP,S], [S,VP,S]}$)))

The first branch of this semantic marker, under NATURE, identifies *promise* as a performative verb. Katz (1977:123) suggests that such semantic markers can be 'unpacked' into component predicates with their associated terms. This unpacking is used to arrive at satisfaction conditions for the propositions represented by these semantic markers. Informally, we might unpack (13) into the two component predicates in (14) and (15), corresponding respectively to the NATURE and PURPOSE branches of (13).

(14)   (Produces the physical realization of a proposition with the intention that
         the addressee understands this proposition)
(15)   (Attempts thereby to assume responsibility for bringing about)

The predicate in (14) represents the portion of the reading of *promise* that is shared by all performative verbs, and the predicate in (15) represents the portion of the reading that is specific to *promise*. Generally, completed satisfaction conditions consist of a conjunction of such component predicates applied to terms; time is also specified in the satisfaction conditions. So satisfaction conditions for assertive sentences with *promise*, like (2) look something like (16).

(16)   (((Satisfies) $[T^1]$) &
            DES ([NP,S]), (Produces … understands the proposition), X
         ((Satisfies) $[T^2]$))
         <DES ([NP,S]), DES ([S,VP,S])> (Attempts thereby . . . bringing about), X
                where X=$t^{(x)}$

The Xs below T^1 and T^2 are place holders for the time specifications, & is logical conjunction, and DES stands for the designata of the terms. For (2), $t^{(x)}$ is $t^{(0)}$, which designates the speech point. In the scenario where B speaks (2) to A, it is almost impossible for the conditions in (16) to be satisfied, unless A and B are speaking at the same time. This feature of (2) explains some of its strangeness and seems to force the historical present interpretation indicated by (8).

Satisfaction conditions for obligatives are fulfillment conditions. We need to define this, using Katz's (1977:156) definition of compliance conditions for requestives.

> **Definition 2**: The fulfillment condition for an obligative proposition P is that (a) there is a speaker (that is the speaker reading in P has an appropriate designatum), (b) the speaker brings about a situation that falls under the concept that substitutes for [S,VP,S] in the reading of P, and (c) the speaker brings about this situation in part because it was the purpose of the promise made by the use of P to obligate the speaker to bring about this situation.

Now according to our definition of performative propositions (cf. Definition 1), (1) qualifies as a performative proposition, since its reading contains an instance of a representation corresponding to (13), a designation that the performer/agent of the act in the proposition is the speaker of the sentence and a time specification that coincides with the speech point. However, (2) qualifies as a constative because, while it has something like (13) in its reading, the performer/agent of the act is the addressee, not the speaker. Since (2) is marked by its reading as a constative, its satisfaction conditions are truth conditions roughly as indicated in (16) with the appropriate substitution for variables. The satisfaction condition for (1), since it is marked as an obligative, is determined by Definition 2 and should look partly as in (17), with appropriate substitution for variables.

(17) ((Satisfies)   [T])
      <DES ([NP,S]),DES([S,VP,S])> (Bring about), X
         where X= $t^{(+n)}$

What this portion of the satisfaction condition for obligatives says is that the individual designated by the subject, which is determined to be the speaker, brings about the situation designated by the reading of the constituent categorized by [S,VP,S] at some time after the speech point of the promise. The portion of the satisfaction condition for obligatives missing from (17) is the portion in clause (c) of Definition 2.

3. CONCLUSION. The model-theoretic approach described in this paper is revised in that it grows out of a theory of the sense structure of sentences that takes into consideration the variety of satisfaction conditions of performative sentences. It accounts for our reluctance to assert (3) mainly by its conclusion that (1) has fulfillment conditions instead of truth conditions. It also accounts for the lingering notion that truth conditions are somewhere around in both sentences by the fact that the embedded S has the basis for a truth value until the *that* complementizer converts this again into an intension. And finally, it leads to the more satisfying reworking of (3) as (19).

(18)   You will be here tomorrow.
(19)   Sentence (1), when spoken by A to B, is satisfied in a given situation just in
        case sentence (18) would be satisfied in a situation exactly the same except
        that B is speaking to A.

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[1] Information from the context of the use of a sentence type includes such information as the identities of the speaker(s) and the addressee(s) as well as the time and place of the use of the sentence. Katz's approach allows us to recognize the powerful effect such factors have on the significance of a particular utterance of a sentence type.

[2] We must note that this definition of performative sentence types refers to semantic rather than syntactic criteria. For example, while one of Austin's original criteria for a sentence to be performative was that it needed to be in the present tense, here we have instead the requirement that the time of the act (of promising, warning, etc.) coincide with the speech point.

[3] But more recently Searle and Vanderveken (1985) present a formal, logical account of speech act theory.

[4] $\lambda x[\psi]$ denotes a function from x to ψ, where λx binds occurrences of the variable x in ψ (see Heim & Kratzer 1998:34–38).

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CLASSIFYING HORTATORY AND PERSUASIVE DISCOURSE

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DISCOURSE ANALYSIS is by nature a multidisciplinary pursuit involving interconnections between language use, cognition, and interaction in social and cultural situations (van Dijk 1997)[1]. Classifying discourse types is crucial in discourse analysis since different types display diverse patterns in linguistic features, some of which can only be properly understood within the context of the given type. Different types of discourse, for example, use differing forms of tense, aspect, and mode to mark their mainlines. While much study has been carried out on narrative discourse, other types of discourse have received only limited attention by researchers. This is partly due to the pervasiveness of narrative texts with their high human interest, which occur around us every day, but it is also due to the difficulties involved in analyzing and classifying non-narrative texts.

This paper focuses on hortatory and persuasive discourse types in particular, which, according to Longacre (1996), aim at influencing conduct and at influencing beliefs and values, respectively. Certain classification systems group them together, while others distinguish between them because of the differences in purpose, macro-level units (macrosegments), and morphosyntactic features. Analyzing naturally occurring texts of hortatory and persuasive types, this paper asks whether they are two distinct types and whether persuasive discourse is similar to other types of discourse, such as expository.

1. DISCOURSE TYPOLOGY. Several studies have proposed discourse typology, in general, either based on text internal criteria such as linguistic features (Longacre 2004) or on communicator's intent and purpose (Tuggy 1992). Since the two bases may not always coincide and in fact often mismatch, several models try to encompass both aspects. For example, Virtanen (1992) discusses two parallel levels of types: text type, closer to the actual texts, and discourse type, connected with the purpose of discourse. She further states that narrative might be viewed as the basic text type with its possibilities of manifesting a variety of notional intents including narrative, descriptive, instructive, expository, and argumentative. Conversely, the argumentative type is the basic discourse type, since it 'is typically exposed through a range of different text types' (Virtanen 1992:305). The argumentative type, which may be exhortation or evaluation in her approach, seems to match with the hortatory or persuasive type in others.

Longacre (1996) proposes etic notional typology and emic surface typology, with the possibility of skewing between the two. There are four basic notional types based on two parameter features: Agent Orientation (AO) and Contingent Temporal

Succession (CTS). Thus narrative exhibits both AO and CTS, procedural only CTS, behavioral only AO (but logical succession instead of temporal succession), and expository lacks both features but has thematic orientation and logical succession. Behavioral discourse divides into two subtypes: hortatory with plus Projection, and eulogy with minus. He says the intent of hortatory discourse is to propose, that is, to suggest, urge, command, which underlie the whole text.

2. HORTATORY AND PERSUASIVE AS SEPARATE TEXT TYPES. In his analysis of 1 Corinthians, Terry (1995:81) identifies the book as hortatory in general with extensive embedding of persuasive and expository types. Unlike expository, he says, both hortatory and persuasive have motivational material. Persuasive tries to 'effect a change in belief and value systems', while hortatory tries to 'effect an action in the reader' and has imperative verbs and other command forms as its mainline, at least in Koine Greek. He gives a constituent analysis of a persuasive text, 1 Cor. 2:6–16, whose non-imperative main thesis is found in v. 6: 'We do, however, speak a message of wisdom among the mature, but not the wisdom of this age or of the rulers of this age, who are coming to nothing' (New International Version). Other examples of persuasive texts occur in chapters 12 (about one body with many parts), 13 (love), and 15 (our resurrection and the resurrected body). Along with chapter 14, chapters 12 and 13 constitute a hortatory discourse, whose macrostructure (the central gist or thrust) is proposed as: '**Seek** spiritual gifts, especially prophecy, which builds up the church, but above all, **show** love' (Terry 1996:10). The macrostructure of chapter 15 is 'Just as Christ was raised from the dead, so you <u>should believe</u> that Christians will be raised with a spiritual body at His coming'. The macrostructure of chapters 12–14 is stated using imperatives[2], while that of chapter 15 uses a verb with deontic modal, 'should believe', which can be considered a type of command form (Longacre 1992). In terms of contents, however, chapter 15 is about belief, while chapters 12–14 are about acts.

In presenting notional structure schema for each type—such as the plot in narrative including inciting incident, climax, and denouement—Longacre (1996:34) adds the persuasive type as distinct from both hortatory and expository. For example, hortatory may have macrosegments of (1) the authority and credibility of the text producer, (2) indication of a problem/situation, (3) one or more command elements (which may be brusque or mitigated), and (4) motivation (essentially threats or promises). Persuasive may have (1) presentation of a problem or question, (2) proposed solution or answer, (3) supporting argumentation which may include appeal to the authority or experience of the text producer, and (4) an appeal to give credence or to adopt certain values. Expository discourse differs from hortatory in lacking the feature AO and yet is described as having macrosegments similar to those of persuasive: (1) problem, (2) solution, (3) supporting argumentation, and (4) evaluation of the solution. So expository lacks the command of hortatory or appeal of persuasive, the segment that is minimal and basic to each type, but it instead has evaluation.

3. HORTATORY AND PERSUASIVE AS A SINGLE TYPE. Some researchers do not distinguish between hortatory and persuasive types but simply use either term to cover the texts that aim at influencing both actions and thoughts or beliefs.

Robin Lakoff (1982:28) defines persuasive discourse 'as a type of discourse that non-reciprocally attempts to effect persuasion' and states that persuasion is 'the attempt or intention of one participant to change the behavior, feelings, intentions or viewpoint of another by communicative means'. Although she does not propose a comprehensive text typology, it is clear that she includes within this type both the hortatory and the persuasive types of Longacre and Terry. She focuses on the unequal distribution of power or manipulation in the speech situation and states that advertising, propaganda, political rhetoric, and religious sermons are typical persuasive discourse. When Schmidt and Kess (1986:287) say that persuasion is the 'process of inducing a voluntary change in someone's attitudes, beliefs or behavior through the transmission of a message', they also include change in beliefs and behavior as a single type.

Much literature presents studies of so-called hortatory discourse without trying to make the fine distinction between beliefs and acts. Breeze (1992) presents two types of information in Ephesians: exhortation type in direct or mitigated commands, and supportive type, which includes situational, motivational, credential, and enabling information. Breeze (1992:346) states that 'Christian experience, theology, and ethics cannot be separated', quoting Stott (1979:193) from his study of Ephesians: 'what we are governs how we think, and how we think determines how we act'.

Clendenen's study (1993) is on Malachi as a hortatory text. He presents three movements in the structure of Malachi, each of which has macrosegments of change, motivation, and situation. The changes urged in the three movements are: to end vain offerings, end faithlessness, and return to God with tithes. While his term change seems to be referring to changes affecting behavior, to end faithlessness involves changes in both belief and behavior.

Longacre analyzes 1 John as hortatory because, as he states, overt command forms are basic to the text, although only 9% of main clause verbs are command forms and 58% are relational and static. The frequency counts make the surface structure of 1 John look more expository than hortatory (Longacre 1992:278). But, in many hortatory texts, it is not unusual to have only a small percent of command forms, which tend to be rather blunt. We often use less blunt forms like indicative mood, rather than imperative, to persuade hearer to be more inclined to listen to us and act accordingly. According to Longacre, the macrostructure—a summary, precis, or abstract— is explicitly stated in 1 John 3:23: 'And this is His commandment, that we should believe in the name of His Son Jesus Christ and love each other' (ibid. 281). This theme of the correct belief and behavior is echoed in 5:1 as well. In terms of notional intent, then, the book has both persuasive and hortatory elements. In surface structure, it includes elements of expository, persuasive, and hortatory types, but the mainline is in command forms.

Wendland (2000:25) shows that the epistle of 1 Peter presents biblical instruction and practical exhortation. The purpose of the letter is stated in 1 Peter 5:8–11 and in

5:12: 'to encourage believers to remain steadfast in faith and hope while manifesting purity of life as the "called and elect" of God in the face of some strong opposition, temptation, and persecution'. He (ibid. 55) discusses the structure of an argumentation model by Thuren (1995:88) regarding the arguments pertaining to conviction (of one's intellect) and persuasion (of one's emotions and volition). The former is said to influence the thinking of the reader by convincing them of the validity of a certain assertion, whereas the latter is to move people to action. A solid conviction is needed to persuade someone to change action, so persuasion normally builds upon conviction[3]. The overall arguments of 1 Peter are found throughout the epistle in three types of information: problems, motivations, and appeals (Wendland 2000:66–67). The last type, appeals, includes actions (endure suffering, good behavior to all, live in harmony with others) and beliefs (remain streadfast in faith).

4. SAMPLE TEXTS. The following texts illustrate different combinations of surface and notional features of hortatory, persuasive, and expository texts. The first text comes from *The Dallas Morning News* (June 8, 2004), with the headline in an imperative, '**Prepare** to be bugged, bitten'. A box in the middle of the article has its own headline in capital letters, with four bulleted items:

(1)   TIPS ON REDUCING PROBLEMS
  - **Get rid** of standing water—**overturn** containers, **change** the water in pet dishes frequently, **cover** trash cans and **repair** leaking plumbing or exterior faucets.
  - **Maintain** door, porch and window screens to keep mosquitoes out.
  - **Wear** long-sleeved shirts and long pants when outdoors, and **spray** clothing with repellents containing permethrin or DEET because mosquitoes may bite through thin clothing.
  - **Stay** indoors at dawn, at dusk and in the early evening.

With every sentence in imperative mood, we are told what to do (the command macrosegment) to avoid being 'bugged, bitten', which is the motivation universally shared and thus implied.

The main body of the text, surrounding the box, has an indicative sentence as the sub-headline. See the first sentence in (2).

(2)   Wet, cool spring is expected to bring more bloodsucking critters.
  [a] The recent storms are going to bring swarms.
    'It's going to be pretty much perfect for insects through the summer. We had one of those springs that was wet and coolish, but never got horrible. Everybody remembers it as pleasant', said Dr. Roger Gold, an urban entomologist… 'So did the bugs'.
  [b] The repercussions of the wet, temperate weather will be felt for months to come. Mosquitoes, ticks, chiggers and fleas are expected to bite their way into our lives.

'Tons of people already have been coming in with complaints of out-of-control flea infestations in their homes and their yards', said <u>Kendall Sheffield</u>, <u>a vet technician</u>… 'The fleas have taken over their animals'.

[c] People <u>need to protect</u> themselves and their pets from the coming scourge since some pests carry disease. Insect repellent containing DEET <u>is recommended</u>.

[d] Mosquitoes can carry West Nile virus, which can sicken people and horses. They also carry heartworms, which can be fatal for dogs and cats.
'The more mosquitoes you have, the more opportunity you have for disease', said <u>Dean Brown</u>, <u>a master gardener</u>…

[e] Creepy crawlers, such as slugs, snails and cockroaches, will have a banner year also. Unfortunately, when the summer heats up, they'll want to move inside where it's air-conditioned.

[f] 'They just love us to death', <u>Dr. Gold</u> said.

The main text in (2) presents problems and undesirable situations, except in [c], which adds a mitigated command (with a modal form *need* and a recommendation). The text includes quotations from three people explicitly named, whose areas of expertise are related to the issue (an urban entomologist, a vet technician, and a master gardener), thereby giving the authority or credential to the article. This text can be viewed as a prototypical hortatory text, aiming at influencing the reader's conduct, with four macrosegments: authority, problem/situation, command, and motivation (avoid getting bugged and bitten, which is implicit given human nature). The conditions predicted for the future may be viewed as the motivation to act now. The warnings about West Nile virus, etc. in [d] and [e] may be threats that Longacre (1996) refers to.

Another article from *The Dallas Morning News* (July 3, 2004) warns about mosquitoes. The headline and sub-headline are in the first two lines in (3). As an indication of authority, *Associated Press* follows the headings, and *College Station, Texas* appears before the main text. Again, an expert's opinions are given several times in direct and indirect quotations.

(3)   **Call** in the swat team: Mosquitoes to be thick this summer.
       After June rains, bugs should hatch by the millions across Texas.
   [a] Now that much of the rains that plagued Texas throughout June have slowed or stopped, it's time for a plague of a different kind in July.
   [b] **Get out** the mosquito repellent.
   [c] 'They are now all congregating at the edge of town, in town or coming to town within the next few days, and they're probably going to meet everybody on the Fourth of July in the back yards and lawn parties', said <u>Jim Olson</u>, <u>entomologist</u> with Texas Agricultural Experiment Station.
   [d] The consistent rains have flushed out breeding sites of the dreaded Culex mosquitoes, notorious carriers of St. Louis encephalities and West Nile. But

different breeds of the bloodsucking bugs, called floodwater mosquitoes, will be hatching by the millions.

[e] Some of these insects can travel 25 to 30 miles looking for a meal, although most varieties in Texas—except for the Aedes vexans in far West Texas—don't carry West Nile.

[f] Coastal cities can expect an influx of two types of mosquitoes. The flood-water variety will attach from inland pastures while traditional salt marsh varieties will descend from rice patties and marshes.

[g] 'These particular species will meet in the streets of downtown Houston and Beaumont and other cities along the coast about the Fourth of July', <u>Mr. Olson</u> said.

[h] As with all mosquitoes, <u>he advises</u> using protective measures, including clothing and repellent.

[i] Eventually, puddles of standing water left by the rains will produce West Nile-carrying bugs, <u>Mr. Olson warned</u>.
'We may be in disease trouble', he said. 'The standing-water mosquitoes aren't going to have to look far to find a breeding site. They'll be in mosquito heaven'.

This article has a few command elements: the title, [b] in an imperative mode, and [h] with the verb *advises*. Other than these, most of the article presents problems and undesirable situations with bugs after heavy rains, with the covert motivation that we won't get bitten and get sick. The problems that are predicted to occur in the future may actually be explicitly stated threats as motivation for actions (note the verb *warned* in [i]). Having all the macrosegments of a hortatory discourse, this is a hortatory text as well in its overall text type. However, the bulk of it is explaining the current and future situations and gives the flavor of an expository text. The macrosegment of command gives generic instructions and seems secondary to that of the problem. Compared to the earlier text, in (1)–(2), this is less prototypically hortatory, because of extensive embedding of expository material and the weight placed on it.

Let us compare these with a third text by Dean Ornish (*The Reader's Digest*, July 1998) that tries to convince the reader that love and intimacy encourage healing. Due to space limitations, eight paragraphs between [c] and [d] are omitted. They comprise embedded narratives reporting on the studies done in Berkeley, Israel, etc. to document supporting evidence for the thesis.

(4) How Love Heals

[a] 'I ask virtually every patient I see', says Dr. Harvey Zarren, a cardiologist in Lynn, Mass., '"With whom do you share your feelings?"' They look at me like I'm from outer space. But *when people feel loved, things happen in their body's physiology that encourage healing*. It's just amazing to watch'.

[b] My work with cardiac patients over the past 20 years <u>has convinced me</u> that *love and intimacy are at the root of health and illness*. If a new drug had

the same impact, virtually every doctor in the country would be recommending it for his patients. It would be malpractice not to prescribe it. Yet with few exceptions we doctors don't learn much in our medical training about *the healing power of love*.

[c] <u>It may be hard to believe</u> that *something as simple as talking with friends, feeling close to your parents or sharing thoughts openly can make such a powerful difference in your health.* But <u>many studies document</u> that these things do.

[Not included here are five embedded narratives in eight paragraphs: studies from Berkeley, Israel, Sweden, Finland, and Pittsburgh.]

[d] <u>I believe the evidence is compelling</u>: *love and intimacy lead to greater health and healing, while loneliness and isolation predispose one to suffering, disease and premature death.*

[e] Why these factors are so important, however, remains a bit of a mystery. I find it extraordinary that such an important and well-documented health factor is not better understood.

[f] 'There is a factor here that's difficult to measure', says Dr. Rachel Naomi Remen… 'Why do some people get well even though their physicians think they have no chance, while others die who seem to have had every chance to recover? Survival seems to depend on something more than just having the right treatment. Perhaps *knowing that others care, that you matter to other people, strengthens a deep impulse toward life—a will to live—that is in every one of us*'.

[g] I have no intention of diminishing the power of diet and exercise or even drugs and surgery. But <u>scientific studies have made it clear</u> that *the capacity to nurture and be nurtured—to have what I call an open heart—is vitally important to having a long, healthy life.*

The thesis (shown in italics in (4)) occurs in every paragraph except [e]. The mystery introduced in [e] about why love is important leads to the second expert's quoted opinion in [f]. A new paragraph may have been made because of the direct quote starting [f], following English orthographic convention. Virtually every paragraph repeats the thesis in paraphrases, including the two, [a] and [f], which are direct quotations.

On the surface of discourse, this text is clearly expository—explaining how love heals—with arguments and evidence to support the thesis. The text starts with a quote by an authority introducing the thesis in [a], and it ends with a concluding evaluation in [g]. It has the grammatical features of the expository type, such as the use of present tense for timeless truth, inanimate subjects, and verbs of low transitivity in mainline clauses. The fact that there is no imperative or command form also supports the classification of this text as expository. The problem is covert: how can we heal when we are sick? The solution, at least part of the solution, is the thesis repeated that love heals. There is no appeal (as in persuasive discourse) or command (as in hortatory).

What is the notional intent of this text, however? Is it just to explain that it is the case that love and intimacy heal many patients? I believe there is more to it under the surface. That is, it tries to persuade us to change our beliefs or views about illness and healing, and possibly even to do something about it (i.e. change our behavior) if we don't have people who we love and who love us. As we understand the expository material in the text, we become persuaded to change our thinking (if we didn't know about it or believe it before). Then as we apply the conviction to our own circumstances, the text may go further to influence our acts. Therefore, in terms of notional intent we may call it a persuasive text. Going beyond explaining the findings, it urges us to change our views.

In (5) below are the beginning nine sentences and the final six sentences from another text. This rather sarcastic article by Steve Chapman (*The Chicago Tribune*, October 3, 2002) answers the question it poses in the title negatively and argues that Hussein is not crazy and would not attack us or use weapons of mass destruction[4].

(5) Is Hussein too crazy for us to control?
    [a] He's a megalomaniac who has weapons of mass destruction and dreams of conquest. If left alone, he *is bound* to shatter the stability of the Middle East and the world. Anyone who expects him to behave rationally *is deluded*. He's so reckless and warlike that there's no telling what <u>he might do</u>.
    [b] No, I'*m not talking* about President Bush. I'*m talking* about Saddam Hussein, as portrayed these days by those advocating war with Iraq. They <u>*claim* we must act</u> now to keep him from getting nuclear warheads and other weapons of mass destruction.
    [c] Skeptics, including myself, <u>*reply* that he would never use</u> those weapons against us because he <u>*knows* we would obliterate</u> his regime and his country. The administration's supporters *insist* that though our nuclear arsenal was enough to contain Joseph Stalin and Mao Tse-tung, it <u>can't deter</u> the Iraqi dictator.

    [Sentences 10–39 omitted, which give problems and arguments based on the incidents in Iran and Kuwait.]

    [d] Hussein <u>would stop</u> at nothing to keep himself in power. That *explains* his attacks on Iran and Kuwait. But it also *explains* why he <u>would never dare</u> to use weapons of mass destruction against us, unless he <u>were</u> going to be destroyed regardless. If he <u>were</u> suicidal, he <u>would have unleashed</u> his chemical and biological weapons during the Gulf War—which he very rationally chose not to do.
    [e] Yet today, the Bush administration and its supporters <u>*insist* we must go</u> to war because Hussein <u>can't be deterred</u> from doing the very thing he has already been deterred from doing. If you're looking for a leader who's disconnected from reality, you <u>don't need</u> to go to Baghdad.

The italicized verbs in present tense (e.g. *is, claim, reply, explains*) show that this text may be expository on the surface, but it also includes modal forms (underlined here) like *would* and *must* along with such speech verbs as *claim*, *reply*, and *insist*, displaying persuasive features. Certainly, its intent is not just to explain the situation but to persuade the reader to believe that Hussein would not attack the U.S. This text displays sarcasm in comparing Hussein and Bush. The middle part, omitted here, shows less sarcasm but presents arguments against the view that Hussein is crazy and dangerous, citing incidents in Iran and Kuwait.

The next text to consider is the famous speech 'I have a dream' by Martin Luther King, Jr. (available on-line at http://www.americanrhetoric.com). It is much too long to reproduce here. It starts with a sentence implying the authoritative situation, the greatest demonstration for freedom: *I am happy to join with you today in what will go down in history as the greatest demonstration for freedom in the history of our nation.*

Then it presents the problem that the Negro (as used in his speech in 1963) still is not free one hundred years after the signing of the Emancipation Proclamation. The command stretches seven long paragraphs: we have come to demand justice. A section shown in (6) addresses *the fierce urgency of Now*. If we remove the mitigating repetitive expression *Now is the time to*, we get the commands.

(6)   Now is the time to make real the promises of democracy. Now is the time to rise from the dark and desolate valley of segregation to the sunlit path of racial justice. Now is the time to lift our nation from the quicksands of racial injustice to the solid rock of brotherhood. Now is the time to make justice a reality for all of God's children.

In the sub-unit specifically addressing *my people*, he uses command forms more explicitly: several imperatives (**continue** to work and **go** back), cohortative *let us* twice, and the deontic modal *must* seven times (e.g. *We must not allow our creative protest to degenerate into physical violence*).

Finally, the motivation of hope and faith covers several paragraphs up to the end, with *I have a dream* repeated nine times, two of which are shown in (7).

(7)   I have a dream that one day this nation will rise up and live out the true meaning of its creed: We hold these truths to be self-evident that all men are created equal. I have a dream that one day on the red hills of Georgia the sons of former slaves and the sons of former slave owners will be able to sit down together at the table of brotherhood.

The statement *we will be free one day* along with another poignant repetition of *Let freedom ring* nine times in parallel structure provides further motivation. The final part of the speech is given below.

(8)   <u>Let freedom ring</u>—from every hill and molehill of Mississippi, from every mountainside, <u>let freedom ring</u>!

    And when this happens, when we allow <u>freedom</u> to ring, when we let it ring from every village and every hamlet, from every state and every city, we will be able to speed up that day when *all* of God's children, black men and white men, Jews and Gentiles, Protestants and Catholics, will be able to join hands and sing in the words of the old Negro spiritual,

    '<u>Free</u> at last, <u>free</u> at last.

    Thank *God* Almighty, we are <u>free</u> at last.'

What type of discourse is this beautiful, profound speech full of rhetorical devices? The text demands the hearer to change his values and beliefs on racial justice (unless these values are already right). However, it also involves the hortatory function of arguing for a change of action, e.g. recognizing every citizen's right to vote. In the surface structure, it has features of both hortatory and persuasive types, imperatives and other forms of command, rhetorical questions, and present and future tense forms, especially in the motivation section. The text may be hortatory in both surface and notional structures, but the persuasion for the belief is so strong that it might be called a persuasive text. Once a person has correct belief, correct behavior should follow.

5. CONCLUSIONS. A discourse typology established by plus or minus certain features may not be able to handle all sorts of texts. Such a typology provides a basic starting point. But a prototype approach, as applied to several areas of linguistics (George Lakoff 1987, Taylor 2003, Hopper & Thompson 1984), is helpful in text classification for analyzing those texts that tend to fall on the borderlines between types.

In the basic notional discourse typology for texts with logical succession (i.e. minus contingent temporal succession), we may just posit expository (no particular, specific agent orientation) and hortatory (specific agent or audience oriented to have their beliefs and behavior changed). Then how should we classify persuasive discourse in the overall classification scheme? Persuasive may be grouped with hortatory in its intent, or it may be expository on the surface when no command forms feature on the mainline. A given feature may be present more-or-less, rather than on-and-off as if the distinction were black and white. A text may in fact be gray, displaying degrees of being more hortatory-like or expository-like on a continuum with the persuasive type in the middle. Thus the 'How love heals' and 'Hussein' texts are between expository and persuasive, while 'I have a dream' would be between persuasive and hortatory[5]. 'Prepare to be bugged' would be prototypical hortatory. The text on mosquitoes is hortatory in its effort to impact our behavior to avoid being bitten and yet it is a less prototypical text due to the overall weight and extensive embedding of expository material[6]. Less prototypical types of texts may have skewing or mismatch between surface and notional types or extensive embedding of a different discourse type.

We might describe the continuum as follows: a prototypical expository text tries to make us understand with our head and mind, a prototypical persuasive text to make us believe with our heart, and a prototypical hortatory text to make us behave with action. Head/mind, heart, and action can all come together and be integrated in one hortatory discourse. At the expository end of the continuum, there is no agent orientation, that is, the discussion or explanation is generic, not pertaining to specific individuals. As we move towards the persuasive middle, individuals are brought in to believe personally, and then at the hortatory end, we are led to behave, the external action shown toward others.

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[2] Throughout the paper, imperatives are boldfaced, and underlining and italics are used for other highlighting. In Section 4, small letters, a, b, c, etc. are added in brackets for ease of reference.

[3] Here arguments for conviction vs. those for persuasion are compared, roughly corresponding to the persuasive and hortatory types of Longacre and Terry and displaying terminological differences among models.

[4] See Owens' thesis (2003) comparing this text with a Russian text in her study of peaks in expository texts.

[5] All biblical texts mentioned in Sections 2–3 would also be similar to this 'I have a dream' text.

[6] In a discrete scheme with only expository and hortatory types for texts with logical succession, 'How love heals' and 'Hussein' may be classified as expository on the surface but hortatory in notional intent. They are examples of skewing of discourse types. 'I have a dream', 'Prepare to be bugged', and 'Mosquitoes' would be hortatory in both surface and notional intent.

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FOCUS-AFFECTED READINGS OF WEAK NPS
AND INFORMATION UPDATING

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IN THIS STUDY, I describe how focusing will affect a semantic restriction on the occurrences of weak NPs. I argue that a quantificationally weak NP must receive focusing for felicity of discourse information when it provokes a conflict with a property-denoting predicate. The main question I discuss is illustrated in the following Japanese examples.

(1) **Property-denoting sentence with a weak NP subject**
    a. without an accent on the subject:
      # *Keikan-ga   aikokuteki-da.*
      policeman-NOM   patriotic-Copula
      Intended: 'A/some policeman is patriotic' ['#': semantic infelicity]
    b. with some accent on the subject:
      KEIKAN-ga   aikokuteki-da.
      'It is a policeman/policemen who is/are patriotic'.
(2) **Inalienable possession with double-nominative (DN I-POSS)**
    a. without an accent on either nominative NP:
      #*Otona-ga   ashi-ga   hayai.*
      Adult-NOM   foot-NOM   quick
      Intended: 'Adults are quick in walking/running'.
    b. with some accent on the first nominative NP:
      OTONA-ga   ashi-ga   hayai.
      'Adults are quick in walking/running'.

In (1), observe that focus affects the restriction that prevents a weak NP from co-occurring with a property-denoting predicate. Capital letters indicate prosodic prominence by means of word accents. One and the same structure can be either felicitous or infelicitous in Japanese, depending on the focus assignment on a subject. A sentence is acceptable only when it is accompanied by an additional accent on a subject NP, as in (1)b. Also in (2) with what is called Inalienable Possession with double-nominative (hereafter DN I-POSS), we see a similar contrast. Overall, the felicity contrast observed in both (1) and (2) is derived from one and the same structure and depends on prosodic prominence, so structural or semantic representation alone cannot explain the observed phenomena.

The main points are the following: first, the prosodic prominence of focusing saves an otherwise infelicitous utterance such as (1)a or (2)a; second, in the observed constructions, focusing occurs in the process of information updating at the level of discourse representation, which is distinct from that of structural representation. With the discourse representation, hearers can identify which part of an utterance represents a valid contribution to their information state at the time of utterance. Therefore, a weak NP must receive focusing for felicity of discourse information when it provokes a conflict with a property-denoting predicate. The examples throughout are mainly taken from Japanese. In section 1, I briefly discuss certain important properties that the nominative marker *-ga* is equipped with in Japanese. Nominative *-ga* signals a weak NP and plays a key role in the phenomenon at issue. Section 2 begins with a brief introduction of some semantic restriction on weak NPs, and then follows the discussion of how the restriction can be obviated by means of focusing. Section 3 deals with the focusing involved in one kind of DN I-POSS construction, and I argue that the same focusing process as the one observed in (1) is relevant to DN I-POSS examples such as (2).

I turn now to certain important properties of nominative markers in Japanese.

1. INHERENT FUNCTIONS OF THE NOMINATIVE PARTICLE *GA*. Japanese is agglutinative, building up constituents mainly with suffixes. Nouns generally lack a distinction for number and definiteness: that is, no common plural form or English article equivalent exists. Cases are marked by a limited number of postpositional particles such as nominative *-ga*, accusative *-o*, dative *-ni*, and so on. In addition, there is a topic marker *-wa* that introduces an entity that is salient in discourse. When the topic marker *-wa* appears, it supersedes the nominative *-ga* or accusative *-o*. In Iwasaki (2002) and Ishikawa (2003), some inherent properties of *-ga* are discussed. In (3) I illustrate the contrast between *-ga* and *-wa*.

(3)   a. *Nijyu-nin   kurai-ga   onaji   tooan-ni   natta.*
          Twenty-persons   about-NOM   same   answer-sheet-to became
          'About twenty people's answers became identical with one another'.
       b. *Nijyu-nin   kurai-wa   onaji   tooan-ni   natta.*
          Twenty-persons   about-TOP   same   answer-sheet-to became
          '[As far as I know] as many as/at least twenty people's answers became identical with one another'.

As indicated in the translation of (3)b, the speaker's involvement in assessing the number of people concerned is observed with the subject plus *-wa*, whereas in (3)a the whole sentence with *-ga* introduces a scene without an indication of the speaker's assessment, as if the situation were described by an omnipresent being. Either the subject NP with *-ga* or the entire proposition can be interpreted as discourse-new, which is the term used in Prince (1992). This contrast illustrates the fact that the

nominative particle *-ga* marks a grammatical subject but clearly does not serve to mark the speaker's assessment of the propositional content in discourse.

Ishikawa (2003) discusses some properties of the particle *-ga*, which I illustrate in (4).

(4) a. *Aru   hito-ga   kita.*
        some/a certain   person-NOM   came
        'A/One person came'.
     b. # *Aru   hito-wa   kita.*
        Some/a certain   person-TOP   came
        'A/one person came'. (Miyagawa 1987:199, [32])

An existential *aru* 'some' introduces an indefinite entity. Existential quantification is compatible only with *-ga* in (4)a. In contrast, an entity with *-wa* is marked as already salient in discourse. In the process of information updating, the indefinite entity newly introduced with *aru* cannot be already salient in the present discourse. Using *-wa* in (4)b therefore produces an infelicitous sentence. Thus, in (4), a new entity must be introduced existentially by the subject NP marked with *-ga*.

In addition, some kind of individuation is inherent to *ga*-marked NPs, as in (5).

(5)   *Mori {#-wa /-ga}   akai.*
        forest {-TOP/NOM}   red
        '{#Forest / the forest I see} is red'.

In (5), the felicitous reading only indicates the existence of a single forest or of forests that are individually recognizable[1]. The color of a forest is not usually red in itself, so the sentence depicts a particular scene but does not depict a general property of forests, which is what would be communicated with *-wa*. Thus the generic reading with *-wa* that would generally be acceptable in the subject position is not possible, as observed with the infelicity of *-wa* in (5). Therefore, the *ga*-marked subject represents existential individuation.

In section 2, I discuss how an existential subject with *-ga* can be connected to the prosodic contrast observed in (1) and (2).

2. SEMANTIC GENERALIZATION ON WEAK NPS AND FOCUSING. It has been argued that existential subject NPs are quantificationally weak and are subject to some restrictions. Milsark (1974, 1977), Ladusaw (1994), and Herburger (1997) argue that weak NPs cannot co-occur with property-denoting or characterizing predicates. According to this generalization, only strong NPs may appear as the subjects of such predicates. The contrast between (6) and (7) illustrates this generalization.

(6) **Existential (non-quantificational) sentence**
     a. There is/are {a/some/several/few/ Ø} wolf/wolves at the door. – weak NPs

(6) b. *There is/are {the/all/every/those/John's} wolf/wolves at the door. – strong NPs
(7) a. *A man was intelligent. –weak, existential NP + property-denoting VP
      b. Everyone was intelligent. – strong NP + property-denoting VP

Weak NPs are illustrated in (6)a. In the existential construction, only weak NPs can occur, whereas strong quantificational NPs cannot. On the other hand, a property predicate, *be intelligent*, does not allow a weak NP to co-occur in the sentence in (7)a, while a strong NP, *everyone*, can co-occur. This is in fact parallel to the contrast between sentences with *-ga* and *-wa* in Japanese. However, it turns out that, although (1)a with *-ga*, repeated below as (8)a, is not acceptable without an additional accent, (1)b repeated as (8)b is felicitous with *-wa* with or without an accent.

(8) a. without an accent on the subject: [= (1)a]
      #Keikan-ga   aikokuteki-da.
      policeman-NOM   patriotic -Copula
      Intended: 'A/some policeman is patriotic.'
      b. [Kind-NP Subject-*wa*] + property-denoting predicate
      Keikan/KEIKAN-wa aikokuteki da.
      'Policemen are patriotic.'/ 'It is policemen who are patriotic.'

The weak NP generalization suggests that a *ga*-marked subject is not compatible with a property-denoting predicate due to its existential nature. The infelicity of (8)a, then, is derived from a general semantic incompatibility between a weak, existential *ga*-marked subject and a property-denoting predicate such as *aikokuteki-da* 'be patriotic'.

Now the next question to ask is how the infelicity of (8)a is improved with focusing. Focusing can be understood as dividing a relevant propositional content into two components: a focused part and a defocused part. These convey new information and presuppositions in discourse, respectively. New information corresponds semantically to a **variable** that must be identified with respect to the presupposed proposition 'Some entity is patriotic' which is given in the preceding discourse. Because some additional discourse information is needed for felicity in (8)a, such a presupposition evoked from the defocused part of the utterance via focusing saves an otherwise semantically unacceptable utterance.

McNally (1998) argues that, in a weak existential sentence, a subject may not be referential, so that the introduction of a new discourse referent requires the existence of a particular sort of eventuality from the sentence in which the referent is introduced. Now this is one of the main points of the present study. When the utterance in (8)a has a focused subject, the defocused predicate component is now understood to evoke a presupposition that represents the existence of a particular eventuality in the preceding context, namely a presupposition that 'some X is patriotic'. Through this evoked presupposition, some individual is necessarily contained in the eventuality mentioned in prior discourse. Namely, **some entity that is patriotic exists**. In the process of information updating, property-denotation is reduced to the presupposition

due to focusing on the weak NP *keikan* 'policeman' in (8)a, thereby turning its entity into new information as the referent of a variable. Therefore, the weak NP generalization, still relevant, is overridden by the prosodic highlighting of focusing in discourse processes. Thus, the felicitous (1)b obtains via focusing on (8)a.

Consider the English example in (9), taken from Krifka et al. (1995: 24, [44b])

(9)   *Shirts must be worn.* (a sign at a restaurant entrance)
       a. If you want to enter this restaurant, you must wear a shirt.
       b. The only thing you can do with a shirt is wear it.

While (9) may have other readings, I assume that reading a is the more natural interpretation, whereas reading b is less favored and seems pragmatically odd. This contrast is reminiscent of the acceptability difference between the two readings of Japanese *ga*-marked subjects. (10) is the Japanese counterpart of (9). When the subject is focused in (10)a, it is a narrow focus. As a result, the proposition is divided into two components.

(10)   *Shatu-ga   chakuyosare-nakereba   naranai.*
        shirts-NOM worn-be   -must
        a. *SHATU-ga chakuyo-sare-nakereba naranai.*
        b. #*Shatu-ga CHAKUYO-sare-nakereba naranai.*

In (10)a, *shatu-ga* is in focus and informationally (discourse-)new, while the remaining component is presupposed. The entity of the existential subject is licensed by the presupposed eventuality and then highlighted. In other words, a shirt exists in the eventuality of being worn. When the predicate *chakuyosare* is focused in (10)b, by contrast, sentential focus emerges. However, in spite of the focused modal 'must be worn' which should evoke some salient event of shirts being worn, shirts are things to be worn by default without the need for an external discourse condition. Thus, reading (10)b is odd.

In essence, with focusing on a weak NP in a property-denoting sentence, the existence of an eventuality can be evoked. Then the weak NP obtains a referent through the evoked eventuality. Otherwise the utterance would not be felicitous. This kind of focusing manifests itself through prosodic prominence in Japanese and by other means in different languages.

In section 3, I extend the prosodic highlighting of focusing to the construction of DN I-POSS given in (2).

3. INALIENABLE POSSESSION AND FOCUSING IN INFORMATION UPDATING. As I mentioned in an introductory paragraph, DN I-POSS examples like (2), repeated as (11), also provide a felicity contrast parallel to that with weak NP subjects.

(11) **DN I-POSS [= (2)]**
    a. without an accent on either nominative NP:
       # *Otona-ga   ashi-ga   hayai.*
         Adult-NOM foot-NOM quick
       Intended: 'Adults are quick in walking/running.'
    b. with some accent on the first nominative NP:
       OTONA-ga   ashi-ga   hayai.
       'Adults are quick in walking/running'.

However, the nominative-genitive case conversion called *Possessor Ascension* is not acceptable, when the first nominative *-ga* is replaced with possessive *-no*. This is illustrated in (12), which is not acceptable even with prosodic prominence on the first NP. It turns out that there are different kinds of DN I-POSS and the second kind of example is given in (13). In contrast to (12), the possessive *-no* is acceptable in (13)b.

(12)   # *OTONA-<u>no</u> ashi-ga   hayai.*
        Adult-GEN   foot-NOM quick
        Intended: 'Adults are quick in walking/running.'
(13) a. *OTONA-ga ashi-ga   nagai.*
        Adult-NOM   foot-NOM long
        'Adults are long-legged/have long legs'.
    b. *OTONA-<u>no</u> ashi-ga   nagai.*
        Adult-GEN   foot-NOM long
        'Adults are long-legged/have long legs'.

When I subcategorize (11) and (13) into groups A and B respectively, it seems that the relation of a possessor to its part in group A is more intensional, i.e. of an internal property, than in group B. More examples are given in (14) and (15).

(14) **Group A of DN I-POSS – of internal/inherent properties**
    a. (Being a winner at a musical contest)
       SEITO{-ga/#-no}   hana-ga   takai
       students{NOM/#-GEN} nose-NOM high
       'Students are proud (of it)'.
    b. *TENSHU{-ga/#-no}   hara-ga   kuroi.*
       Shopkeeper{NOM/#-GEN} abdomen-NOM black
       'Shopkeepers are scheming'.
(15) **Group B of DN I-POSS – of physical properties**
    a. *SEIJIKA{-ga/-no}   koe-ga   urusai.*
       Politician {NOM/-GEN} voice-NOM noisy
       'Politicians' voices are too loud'.

  b. *TITI{-ga /-no}*   *hyoujyou-ga*   *kurai.*
     Father{NOM/-GEN}   facial expression-NOM   gloomy
     Father has a gloomy look.

It seems that being fast in action or running in (11) is not taken just as a property of one's legs. The unacceptability of possessive pre-modifiers on the second NP in (12) suggests that the NP cannot be referential[2].

   In fact, Vergnaud and Zubizarreta (1992) argue that there are two types of inalienable constructions in French as well. They argue that what they call the External Possessor Construction (hereafter EPC) can only denote a *type*, whereas the Internal Possessor Construction (hereafter IPC) can denote either a type or a *token*. A type is understood to represent a general property of entities that is intensional in the sense that the represented property is not referential, while a token refers to some entity that is referential. This seems to explain the facts in (16).

(16) a. *Le médecin leur a radiographié l'estomac/*les estomacs (à toutes).*
         The doctor for them X-rayed the stomach-SING/*the stomach-PLUR (to all)
         The doctor X-rayed their stomachs.
      b. *Le médecin a radiographié [leur estomac/leur estomacs].*
         The doctor to them X-rayed their stomach-SING/their stomach-PLUR
         The doctor X-rayed their stomachs.

An NP such as stomach, which is by default singular in the sense that the normal human has only one stomach, can only appear in the singular when used in the EPC in (16)a, but it may appear in either the singular or the plural in the IPC in (16)b. This seems to parallel my argument about inalienable possession in Japanese and endorse the extended inalienability of internal property in Group A in contrast to the physical characteristic observed in Group B. Now my point is the following. In (11) and Group A, the apparent subject cannot be associated with possessor ascension. The entity of the first subject NP is separate from the rest of the proposition, while the remaining portion *ashi-ga hayai* is property-denoting as a whole, with the second NP functioning as premodifier, i.e. part of the predicate, because it indicates the extended internal property of the first possessor NP[3].

   Given this, the contrastive examples in (18) can be accounted for.

(17) a. *Ashi-ga*   *hayai.*   — the second NP of (11) as a subject [Group A]
         Legs-NOM   fast
      b. *Ashi-ga*   *nagai.*   — the second NP of (13) as a subject [Group B]
         Legs-NOM   long
(18) a. *OTONA-ga*   *hayai.*   — the first NP of (11) as a subject [Group A]
         Adults-NOM   fast
      b. *#/? OTONA-ga*   *nagai.*   — the first NP of (13) as a subject [Group B]
         Adults-NOM   long

As the felicity of (17)b indicates, the second NP of Group B is physically the direct subject of its predicate, so that the sentence 'legs are long' is meaningful without the first NP. On the other hand, as the infelicity of (18)b in Group B indicates, the first possessor NP 'adults' cannot be separate from the second NP and therefore cannot be directly associated with being long. The possessor alone is not physically associated with being long, since it is not separable from the physical part named in the second NP. In contrast, in (18)a of Group A, the first NP is separated from the rest, and thus can be a subject.

Note that one weak NP restriction involves property-denotation. This schema applies to Group A because of the internal property those predicates indicate. Therefore, it seems that Group A is most relevant to the meaning shift of weak NPs by focusing, as in (18)a. Now Group A parallels the examples in (1). Consequently, in the process of information updating, property-denotation is reduced with focusing to the presupposition of an eventuality in which a referent of the weak NP in Group A is necessarily contained for felicity of discourse information, as in (11)b[4]. It seems clear that the weak-strong NP semantic generalization is still relevant, although it may be overridden by focusing at the level of discourse information.

4. CONCLUDING REMARKS. In this study of two constructions, I argue that a weak NP must receive focusing for felicity of discourse information when it provokes a conflict with a property-denoting predicate. The main points are twofold: first, prosodic prominence of focusing saves an otherwise infelicitous utterance; second, in the observed constructions the focusing occurs in the process of information updating at the level of discourse representation, which is separate from that of structural representation. Only with a level of discourse representation dealing with focusing can the observed contrast be readily accounted for. Concerning the DN I-POSS, I have discussed how prosodic elements affect the semantic restriction on weak NPs in discourse, but the structural problems regarding the double nominative of the construction still remain open, given my suggestion that the I-POSS ought to be divided into two subgroups. However, I have to wait for future research into this issue. Finally, in Japanese, the properties of -ga turn out to underlie the characterization of weak NPs on the one hand and of discourse-new information on the other.

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1   Recall that a noun is not accompanied by an article or a plural formative in Japanese, so an NP indicating a kind or a category can, in theory, represent either a generic entity, a particular individual, or particular individuals. Despite this, only existential individuation is acceptable.

2   The contrast given seems to raise a problem with the hierarchy of inalienable possession discussed in Haiman (1985), Nichols (1988), and Tsunoda (1996). They generally take body parts alike as being the highest in the hierarchy of inalienable possession. Therefore, the present contrast cannot be accounted for, since *ashi* 'leg/foot' in both (14) and (15) belong to the same hierarchical category, i.e. body parts. The possessor ascension cannot then be understood to apply uniformly to any I-POSS examples, as has been assumed.

3   In another example of inalienable modifiers, Tremblay (1996) also demonstrates that an inalienable modifier introduced by the object of dative *à* may not be referential: it can take a bare NP but not a DP inroduced by a possessive pronoun, whether co-indexed or not, as in (i).

(i) a.   *le/un   petit   garçon   à   lunettes   roses*
        the/a   little   boy   DAT   glasses   pink
        'the/a little boy with pink glasses'

   b.   **le/un   petit   garçon$_i$ à   ses$_{i/j}$ lunettes   roses*
        the/a   little   boy   DAT   his   glasses   pink
        'the/a little boy with his pink glasses'

The data seem to indicate that the object of dative *à* may be a type, but not a token. Such a contrast is also reminiscent of those observed in Romanian inalienable constructions. Manoliu-Manea (1996) observes two kinds of inalienable possession: whole-centered and part-centered. If the discourse is whole-centered, then the whole, being both topical and central, corresponds to the subject, while the part is expressed by a locative prepositional phrase.

4   Nichols and Tsunoda extend their hierarchy argument to possessor ascensions, as in (ii).

(ii) a.   John kissed Mary's lips.
    b.   John kissed Mary on the lips.

Although pragmatic differences between these two examples are discussed in Wierzbicka (1979) and elsewhere, it has also been claimed that a syntactic hierarchy is at work in (ii) (Tsunoda 1996; suggested implicitly in Hyman 1977:107, Fox 1981:324–25, and Durie 1987:388). The claim is that the inalienable possession in the direct object is above everything else higher in the hierarchy than the transitive or intransitive subject. This is due to the different degree of 'affectedness' of possessees and thus the possessor raising of the direct object is more readily acceptable. In fact, the English ascension examples in their discussions are exclusively those of direct object. Again in the Japanese examples that I have shown, however, the hierarchy has nothing to say about the contrast indicated between (14) and (15). First, as Tsunoda suggests concerning possessor ascension in Japanese, Malagasy, and Cebuano, syntactic hierarchy seems to favor the subject's higher position in the hierarchy over that of other syntactic positions; and second, the contrastive pairs given in Japanese both belong to one and the same hierarchical category, i.e. body parts in an intransitive subject position.

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THE PERSISTENCE OF A FICTION: THE SEGMENTAL PHONEME

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> 'The founders of modern linguistics often started with an assumption that
> speech is segmented into phonemes, phones, features… or equivalently they
> transcribed it by symbols such as the International Phonetic Alphabet (IPA).
> It was generally realized, however, that such an assumption is actually false,
> but it was accepted tentatively anyway following Bloomfield (1933:78). Even
> though Twaddell 1935 soon pointed out that the phoneme was in reality only a
> convenient fiction, what was tentative became permanent…'

THIS QUOTATION is taken from Yngve (2003:385). The written version is slightly modi-
fied from his oral presentation at LACUS forum XXIX, where a presumed equivalence
between (segmental) phonemes or phones and alphabetical symbols was made explicit.
In addition to Bloomfield and Twaddell, Yngve cites Hjelmslev 1953[1] and Chomsky 1957
as referents. He needn't have stopped there, as the current edition of Fromkin, Rod-
man and Hyams (2003:232), probably the most popular introductory linguistic text of
the last thirty years (as Fromkin *&* Rodman), still says that every linguist '**knows** that
there are three sounds in the word *cat*… (and) *psycho* has six letters that represent four
sounds'. They go farther in the same paragraph (ibid): 'Everyone throughout history
who has attempted to analyze language has **recognized** (emphasis added) that speech
is divisible into separate elements'. Should there be any doubt about the segmental
nature of phonology in most current C-phonological[2] thinking, it is only necessary to
check Gussmann 2002 or any of the works cited therein as 'newer' materials, a point to
which I return in section 3. The counterfactual assumption that speech acoustics con-
tain segmental phones is an important one for Yngve. He evidently has an additional
implicit assumption that all phonologists who discuss the production of speech use
such imaginary elements and that these elements are basic to their work. Their work
is thus rendered unscientific. He then turns to the ear to produce 'a hard-science pho-
netics-phonology' (Yngve 2003:385). The only inference I can draw from this is that all
previous work on phonetics or phonology is unscientific either because it is based on
a counterfactual assumption of segments or feature systems bunched into segments or
because it focuses on articulation. Articulation is a natural fact and part of what must
be accounted for in any phonology; I therefore reject that possibility. This leaves us with
the counterfactual assumption of segments.

 The question arises as to how something generally 'realized… (to be) false', as
Yngve correctly states, came to be not merely a convenient fiction, but something that

| /b/ | voiced bilabial stop formed with slightly protruded lips |
| /p/ | unvoiced bilabial stop formed with slightly protruded lips |

Table 1. *The /b/ - /p/ contrast in Russian.*

every linguist 'knows' to be true[3]. It is a mystery how any fiction, especially one obviously false from the beginning, could have lasted so long—70 years and counting. It is even more of a puzzle where it came from. The convenience of an alphabetical writing system may justify its utility and ease of use but is hardly sufficient justification for its widespread adoption as a phonological fact.

Yngve has a good point about the counterfactual nature of segments and feature systems in phonology from Bloomfield through current C-phonological systems. However, the assumption of these entities is not universal. Thus the inference that phonology leading to the production of speech acoustics is unscientific does not follow. The present study shows the extent to which Yngve is correct or mistaken.

I begin with an example of part of a segmental phonemic description and show why I say it is obviously false. Following this I show the initial source of the error. Next I provide material of my own (excerpted from Sullivan 2002) originally presented at LACUS forum XXVIII, to demonstrate the logic of a truly non-segmental phonology that can account for both encoding and decoding the speech signal, one which incorporates **phonemic contrast**, though not segmental phonemes, making the logic that underlies contrast fully explicit. I conclude with implications for current phonological theory and a demonstration of the extent of non-segmental phonology that every member of LACUS interested in phonology should know and understand, namely that non-segmental phonological descriptions have been presented at many LACUS Fora.

1. SEGMENTAL PHONEMICS.
1.1. A DESCRIPTIVE FRAGMENT. Traditionally, descriptions of Russian phonology recognize a phonemic contrast between voiced and unvoiced phonemes. This is true of a Neo-Bloomfieldian description which is based on articulation, like that found in Cornyn (1957), and a Prague School description like that found in Jakobson, Cherry & Halle (1953), which is based on acoustics. The purpose of phonemics (more properly, of contrast, which phonemes are supposed to communicate) is to distinguish between (classes of) morphemes, i.e. between different meanings. So it is the contrast between /b/ and /p/ that communicates the difference between *byl* 'he was' and *pyl* 'passion, ardor' in a segmental phonology.

1.2. THE ERROR. To see why such a segmental approach is wrong, it is necessary to consider a wider picture. Consider the basic description of the two phonemes, /b/ and /p/, presented in **Table 1** in articulatory terms but without allophonic distribution statements.

So far, no problem: /b/ and /p/, properly distributed, contrast. But just apply elementary logical analysis to the descriptions of the two segmental phonemes. A

contrast of any sort can only be communicated consistently by a difference. Apply this elementary principle to the materials in **Table 1**. The contrast inferred from an observation of the reaction of native speakers to the phonetic signal is given as /b/ vs. /p/. The difference between them must be located in the differences in their formation. This means that neither the articulator nor the place of articulation can do the job: both phonemes exhibit the characteristic bilabial. Full oral closure can't do the job: both exhibit stop articulation. Slight lip protrusion can't do the job: both exhibit this characteristic. The only thing that distinguishes /p/ from /b/ is the voice characteristic: in /b/ the oral closure does not interrupt the vocal fold vibration we hear as voicing. Voicing appears as a thick, dark line at the bottom of a sonogram and never ceases during the entire syllable *byl*[4]. So why wasn't the voice (and its lack) identified as the phonemic contrast between voiced and unvoiced stops? Why was the difference ascribed to alphabetical segments instead of where it clearly belongs? I asked these questions of several linguists, both faculty and advanced graduate students, during my first semester of graduate study. The only responsive answer came from Alexander Schenker[5], who said, 'Jakobson says the contrast is between ± voice'[6]. Lack of response aside, logical analysis told me I was correct[7].

In short, segmental phonemes were always logically fallacious on their face. Now I show where they came from.

2. THE ORIGIN OF SEGMENTAL PHONEMES. One of the characteristics of the Bloomfieldian effort to make linguistics a science was an insistence on the use of prior definitions, usually called postulates, as a basis for formalization. The scientific rigor of a particular description could then be determined by the degree to which it conformed to those postulates. Bloomfield 1926 set the tone. He was followed by Swadesh (1934:35), which is the source of the segmental phoneme problem. Consider here Swadesh's criteria (= postulates) 2 and 3.

2. *The criterion of partial identities.* By a thorough-going comparison of all sets of words having a phonetic resemblance (e.g., pit-bit, late-latent, etc.), one arrives at a notion of the significant elemental sound types (e.g. voice in the onset of the first pair—WJS). But in the application of this criterion, one must bear in mind the one given next.

3. *The criterion of constant association.* If a set of phonetic elements only occurs together, they constitute a phonemically unitary complex; thus, the stop and the aspiration in English initial p. One or both of the phonetic elements may recur in other complexes without affecting the unitary nature of the complexes; in this event, all the phonemes that involve a given phonetic element constitute a phonemic class.

Clearly criterion 2 allows us to identify voice as the signal of contrast between /p/ and /b/. It would also allow us to identify bilabial vs. apico-dental as the contrast between /p/ and /t/ or /b/ and /d/. And so on. But the features characteristic of contrast

identified by means of the (logically adequate) methodology in 2 cannot be called phonemes in the Swadesh system. Criterion 3 says that a phoneme must be capable of appearing alone[8]. Place of articulation, manner of articulation, and voice never occur alone, only in various combinations. Voice itself is structurally optional in these complexes. When you look at the complexes for /b/ and /p/, one with and one without voice, you get two segmental phonemes, each the size of a letter of the alphabet. These criteria became the basis of Bloomfieldian phonology, and if you wanted to be scientific according to the standards of the era, you had to conform to these criteria and defend them from European approaches like those suggested by Jakobson and Trubetzkoy. By the time Chomsky began publishing, the segmental nature of the basic phonological element was no longer questioned[9]. The clear inconsistency here can be seen in full flower in Harris (1944:115):

> …two independent breakdowns of the flow of speech into elements are **physically and logically** (emphasis added) possible. One is the division of the flow of speech into successive segments; this is used throughout phonology and morphology, and gives us the standard elements… of descriptive linguistics. The other is the division of each segment into simultaneous components… (including) intonations, prosodemes,… and suprasegmental features in general.

Wrong twice. To begin with, the breakdown into segmental elements the size of a letter of the alphabet is physically impossible. Moreover, as I have just shown, the logic of such a breakdown is fallacious. Furthermore, Harris recognizes suprasegmental components or features as phonemic, even though they always co-occur not merely with a segmental phoneme but with a chain of segmental phonemes grouped into a syllable or an even longer stretch of sound, as in Turkish vowel synharmonism. If we can identify a feature that operates in such a fashion for a phonological unit greater than a single segment, we cannot justify ignoring contrastive elements restricted to a single segment. The logic of such an approach is not merely fallacious, as demonstrated above, but insupportable, because it is internally inconsistent.

3. THE SEGMENT IN C-PHONOLOGY. C-phonology was defined in Halle 1959. Halle eliminated contrast but not the segment. His phonological primes are 'distinctive features,'[10] arranged in strict vertical matrices. Prosodic features, e.g. voice in obstruent clusters, are treated by alpha-switching rules (1)a cyclically applied (1)b to produce segmental effects (1)c.

(1)   a. α vce $\rightarrow$ $-$ α vce / ___ $-$ α vce (applied cyclically)
       b. + + $-$ $\rightarrow$ + $-$ $-$ $\rightarrow$ $-$ $-$ $-$
       c. v z t $\rightarrow$ v s t $\rightarrow$ f s t

Later descriptions using feature-copy or feature-spreading rules work much the same: each column in the matrix is self-contained upon both input and output. That is, each column represents a segment. Morpheme and lexical item boundaries were accepted as part of the input from the start, but they came from lexical entries. Thus the morpheme and lexical item did not themselves represent phonological structures. The boundaries were used merely as a means of limiting the application of some rules or of defining the limits of rule cycles. Periodically someone might write a rule that incorporated a syllable boundary ($), but the source of these boundaries was never explained adequately, if at all. No phonological entities larger than a segment were posited.

Goldsmith 1976 introduced 'autosegments', but he was merely re-introducing Harris's simultaneous components in C-phonological dress. Feature spreading may have replaced feature copy rules, but C-phonological theories still retain a segmental tier and worry about licensing individual segments. Underspecification, feature geometry, and optimality theory contain between them the possibility for a kind of non-segmental phonology, but C-phonology has no mechanism by which they can be integrated. A segmental approach retains pride of place in C-phonology, as a glance at Gussmann 2002 and any of the newer studies cited there confirms.

4. UNDERSTANDING. Unlike C-linguists (by analogy to C-phonologists), who are generally not aware of work in other theoretical approaches, Yngve is aware of my work. If he seems to ignore it in Yngve 2003, it may be that he misunderstands how to read it. Since part of the fault undoubtedly lies with my presentation, I now try to rectify that lack.

Consider **Figure 1** (overleaf). It contains a generalized description of a portion of the possible obstruent onsets of Contemporary Standard Russian syllables and is excerpted from Sullivan 2002. It accounts for the logic of the system that underlies all occurring obstruent onsets and the possible onsets that happen not to occur. But reading the structural part of **Figure 1** (everything under PT) is unimportant, as the structural details of onset clusters don't matter in our present discussion. Suffice it to say that the minimal onset permitted here is any single obstruent and the maximum is three obstruents. In two- or three-obstruent combinations, affricates are restricted to final position. With that restriction, any two-obstruent combination is possible. Three-obstruent combinations are the maximum and include kst, fst, tšč, fsx, xsk, etc. That is, the first position can be a stop or spirant (fricative), the third can be any class of obstruent, and the second can only be a spirant. Look at the labels above the diamonds at the bottom of **Figure 1** (T, P, x, č: I took the set of onsets listed above from the full sets of stops, spirants, and affricates). If you look at those labels, the phonology looks segmental. It is not. The ordered AND at the top merely specifies a sequential relationship between outputs and the labels are just that—labels—and no more, there for mnemonic purposes. Now consider the outputs from the phonotactics, which are via the lines to the bottom and right of the diamonds. From the left they are Ap, Lb, Do, Fr, Cl, Sp, and Gr. Some non-immediate details have been left out, but encoding a č (note, the diamond with that label, not a segmental phoneme
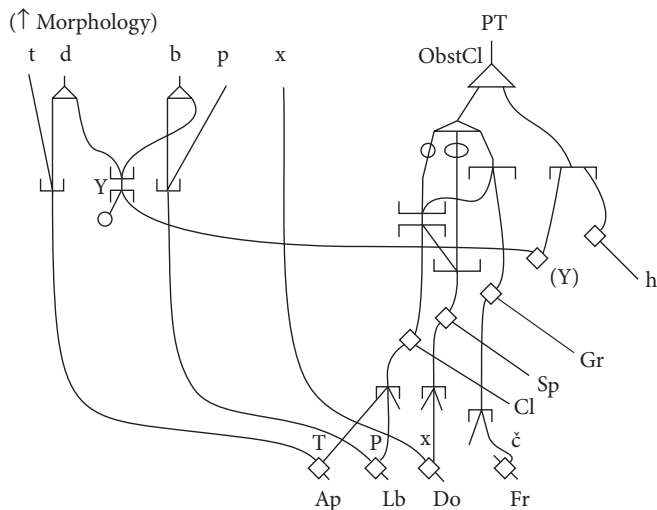
Figure 1. *Part of Russian obstruent onset phonology.*

/č/) produces signals along the lines labeled Fr, Gr, and Cl (Cl not shown in **Figure 1**). This might look like a feature system, and when I talk to an audience of C-linguists, that's the way I treat it. That's the only way they understand it. How we understand it in light of Lamb's life work (cf. Lamb 1966, 1999, everything in between and continuing) should be different: Fr, Gr, and Cl produce more or less simultaneous signals sent to the motor cortex with instructions to provide full oral closure (Cl) with the frontum of the tongue (Fr), releasing the closure through a groove down the center of the tongue (Gr). No segments, no feature system, but a relational network involving contrasts (the downward OR nodes above the diamonds at the bottom) that lead to the motor cortex, then to a sequence of signals to the speech apparatus. Nor is this approach new: cf. Mermelstein 1973. I could do the same with decoding the speech signal if we knew all about the operation of the stereocilia and had convenient labels for their inputs from the lower right.

5. DEFINING THE PHONEME. The primary complex of logical relations in phonology is contrastive function. Communication requires the ability to differentiate between messages semantically, which can only start with some kind of phonetic difference (or a difference inferred along the way, as in Coleman 2004). Contrast requires at least two phonemes. Even if we hear everything, what we acquire for the linguistic system is not merely individual phonemes but contrast. Acquisition of an individual phoneme in isolation is about as likely as the discovery of a magnetic monopole.

The full logic of contrast is given in **Figure 2**. We have two diamonds that relate differing instructions to the motor cortex or signals from the auditory centers (the lines to the right labeled 'sound' for convenience) to different classes of morphemes (the lines to the left). I use the term morpheme here to indicate an eventual relationship to
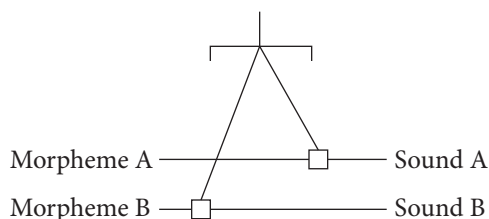
Figure 2. *The logic of defining contrast and phonemes.*

meaning. 'Morpheme' has no real-world existence; rather, it is a relationship inferred from the fact that we communicate most normally by sound stream and the logic that follows from this fact (cf. Coleman 2004). The combination of these relationships to form and to function (or to function and to form—no basic direction is implied) constitute what I understand as semiotic relations. The remainder of the logic of contrast is structural. The lines up from the diamonds are related by an OR node. That OR node is related to the same point or set of points in the larger phonotactic structures (not shown). In short, Hjelmslev was correct to insist that the commutation (OR) test is logically critical in phonological analysis. He never said it was a commutation between segments.

So a phoneme is a diamond with relationships to phonetics **and** to meaning **and** to an OR node that relates it to at least one other phoneme.

6. NON-SEGMENTAL PHONOLOGY AND MEMBERS OF LACUS. Several members of LACUS work or have worked in non-segmental phonology. The late Charles Hockett produced non-segmental phonological work at the height of the Bloomfieldian era (cf. Hockett 1947)[11]. He did only one paper on phonology at LACUS Fora, however, but it was non-segmental (Hockett 1977).

Yet five still-active members have presented explicitly non-segmental phonological papers: Toby Griffen (1975, 1977, 1978, 1979, 1980, 1981, and 1982); Sydney Lamb (Lamb & Vanderslice 1976), David Lockwood (1976), Peter Reich (1975 and 1976), and the present author (Sullivan 1975, 1978, 1979, 1982, 1995, 1998, 2001, 2002). All have produced non-segmental articles in other venues[12]. Lamb and Vanderslice (1976) also violates Swadesh's criterion 3, though a fully non-segmental description was not their goal. See also Lamb 1966.

7. CONCLUSION. Swadesh's criterion 3 was an unnecessary assumption that led to acoustically inaccurate and logically invalid phonological descriptions, eventually caused phonology to divorce itself from real phonetics, and has persisted to this very day in C-phonology. There are indications that some C-phonologists are slowly and painfully trying to extricate themselves from this false assumption, even if they aren't there yet. Still, as I show in sections 5 and 6, not everyone has been entrapped. Moreover, should current C-phonological theories adopt a fully relational network

approach, they could pull clear of the problem. Of course, their theories would then no longer be Chomskyan.

8. POST SCRIPTUM. My last doctoral student at Florida, LACUS member Dina Belyayeva, was in a quandary concerning how linguistics and cognitive psychology could be combined with regard to developmental bilingualism. She was dissatisfied with some aspects of different approaches to cognitive linguistics. I pointed her to the work of Michel Paradis and others whose papers appear in various Forum volumes (cf. esp. Paradis 2001). Her comment: there is so much remarkable material here, she couldn't believe that the series isn't better known. A couple of years ago the board donated full sets of volumes to the two universities I teach at in Poland. Similar comments have come from colleagues at both institutions, where volumes are constantly being borrowed. The breadth of subjects covered and the cogency of the articles published are both worthy of note.

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[1]   It might be possible to interpret Hjelmslev this way, but in the context of his dictum that a totality consists not of things but of relationships, such an interpretation is undoubtedly mistaken.

[2]   'Generative' phonology has never been generative, so the term is basically empty. Because of its divorce from real-world phonetics—and Yngve is right on the money here—a multiplicity of theories have developed, each with some special purpose. I use the term C-phonology (from Chomskyan phonology) to refer to any model of phonology based on the usual Chomskyan assumptions (the Universal Phonetic Alphabet Hypothesis, feature matrices, rewrite rules, and the like).

[3]   An extended email correspondence with Steve Straight made it clear to me that Yngve is not the only one who believes that essentially all phonologists work with segments, whether phonemic or not.

[4]   When Yngve (in press) says that the speech signal is 'unstructured acoustic energy flow', he is surely exaggerating. Even the sound of a single note on a trombone shows the formant structure characteristic of a tube of a given length with the air molecules in it vibrating. The acoustic sound stream is much more highly structured than that.

[5]   I didn't meet Syd Lamb until the second semester of that year.

[6]   In fact, Jakobson once commented to me personally that in general, the distinctive features ARE the 'phonemes'. I understood this to mean that the features characterize the contrast, i.e. this was my interpretation.

[7]   This type of distinctive feature analysis has been used by biologists for a long time. It is still a major tool in the biological sciences. Until the advent of mass spectrometry, it was almost the only tool in qualitative chemical analysis. And so on. Clearly, it isn't *per se* unscientific.

[8]   As if it were a real-world object, Yngve might say, and I agree with him here.

9   For a more complete picture note the differences between Halle 1959 and Jakobson, Cherry & Halle 1953.

10 He retained Jakobson's name for them but denied any contrastive/phonemic (= distinctive) function. See his discussion of 'condition 3'.

11 Someone of that era characterized Hockett as a young fellow with provocative ideas. Perhaps, but in my opinion, he was generally closer to the mark than any of his American contemporaries on most issues and often right on it.

12 As an exercise, Sullivan 1978 was written in a form that would have been acceptable to Bernard Bloch, a former professor. But the original analysis is a non-segmental, relational network study. With the solitary exception of this article, EVERYTHING phonological that the present author has ever done is completely non-segmental.

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ASPECTUAL INFLUENCE ON TEMPORAL RELATIONS: EVIDENCE FROM THE PERFECTIVE *LE* IN MANDARIN[1]

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THE TEMPORAL RELATION between two sentences refers to temporal sequence at which the two events represented by the two sentences take place. Asher and Lascarides (2003) suggest that the temporal relation between two sentences is determined by the rhetorical relation that connects the two sentences together, e.g. if **Narration** connects two sentences together, then the temporal relation of the two sentences matches their contextual order, if **Elaboration** connects two sentences together, then the elaborating event is temporally included in the elaborated event, etc.

Following Asher and Lascarides' (2003) argument for the functions of rhetorical relations, this paper argues that in Mandarin the semantics of the perfective *le* influences temporal relations via rhetorical relations by specifying a default rhetorical relation and by putting a constraint on when the internal process of an event presented by *le* can be accessed.

This paper is organized as follows. Section 1 discusses the semantics of the perfective *le* and its implication for temporal relations. Section 2 provides examples to verify the implication discussed in Section 1. Section 3 provides a Segmented Discourse Representation Theory (SDRT) account. Section 4 summarizes this paper.

1. SEMANTICS OF THE PERFECTIVE *LE* AND ITS IMPLICATION ON TEMPORAL TELATIONS. In the literature, e.g. Lin (2000), Kang (1999), Shi (1990), etc, the perfective (verbal) *le*[2] is usually claimed to locate the final endpoint of an event before a reference time, which results in a completive reading.

However, it has been noticed in some literature, e.g. W. C. J. Lin (1979), that the perfective *le* can present a terminated event as well as a completed event. Therefore, Wu (2003a, in press) argues that the semantics of the perfective *le* must accommodate a completive reading, a terminative reading and an inchoative reading. He proposes a semantics for the perfective *le* as follows.

(1) $[le] =_d \lambda P (\lambda t) \lambda x \lambda t' \lambda e \exists i [P(x, e) \wedge i = [start(e), SigP(e)] \wedge (i \subseteq t) \wedge i < t']$

In plain English, (1) says that the perfective *le* identifies the significant point (hereafter, SigP) of the event or the eventuality it presents and locates, prior to a reference time, the interval between the starting point and the SigP of the event or eventuality. By default, the SigP for an accomplishment is its natural final endpoint. An achievement also has its natural final endpoint as its SigP. The SigP for an activity is

underspecified. The SigP for a stage-level state is defeasibly its starting point and the SigP for an individual-level state is undefined. The default SigP provides a completive reading for an accomplishment presented by the perfective *le* or an inchoative reading for a stage-level state presented by the perfective *le*. If a default SigP is overridden, the new SigP provides a terminative reading for an accomplishment presented by the perfective *le* and a perfective (completive) reading for a stage-level state presented by the perfective *le*[3].

Regardless of whether the perfective *le* presents a terminated event or a completed event, it presents, as a whole, the part of an event from the starting point to the final endpoint. Based on its semantics, the perfective *le* is hypothesized to have two effects on temporal relations:

(2)   Hypothesis for the role of the perfective *le* in temporal relations
      a. The narrative time of a clause with the perfective *le* can be advanced without
         any explicit indication in the context.
      b. The internal process of a clause with the perfective *le* cannot be accessed
         unless it is forced open to be accessible.

2. TESTING THE HYPOTHESIS. Asher and Lascarides (2003) argue that the temporal relation between two sentences is determined by the rhetorical relation that connects the two sentences together. For example,

(3)   a. John fell down.
      b. Mary helped him up.
      c. Mary pushed him.

In (3), (3)a and (3)b form one discourse, and (3)a and (3)c form another. The verbs in the three sentences are all simple past tense, and hence cannot reveal any information about the temporal relations. Instead, lexical semantics can help in this respect. *Help someone up* is a natural sequence to *someone falls down*. In terms of Segmented Discourse Representation Theory (SDRT, Asher & Lascarides 2003), (3)b is connected to (3)a by Narration, which indicates that the temporal order between (3)a and (3)b matches their contextual order. On the other hand, *push someone* explains why *someone fell down*. In SDRT terms, (3)c is connected to (3)a by Explanation, which indicates that the explaining event occurs before the explained event. The temporal relations determined by Narration and Explanation match English speaker's intuition about the temporal relations in these two short discourses.

For Mandarin, it is a reasonable question to ask whether the perfective *le* directly determines temporal relations or whether it indirectly influences temporal relations via rhetorical relations, like the case argued by Asher and Lascarides (2003). The answer to this question is that the perfective *le* indirectly influences temporal relations via rhetorical relations. The evidence comes from the fact that a sentence/clause with the perfective *le* can have different temporal relations with clauses adjacent to it.

These relations are determined by the rhetorical relation connecting the clause with *le* and the clauses adjacent to it. The following examples can demonstrate this point.

(4) a. *hushi yuanzhang zai kaimushi de zhici   zhong tandao **le***
      Hushi dean   at opening DE speech inside talk   le/PFV

     bushao ling   ren   shen si   de   hua
     a lot   make person deep think DE   words

    'In his speech at the opening, Dean Shi Hu talked about a lot of things
    that made people think profoundly.'

  b. *ta tandao kexue shi yi zhong fangfa   mingzhu   shi yi*
     he talk   science be one kind   method democracy be one

     zhong shenghuo fangshi
     kind   life   style

    'He said that science was a way (of explaining the unknown) and
    democracy was a lifestyle.'

In this example, (4)b provides details for (4)a, i.e. (4)b is (part of) what Dean Hu talked about at the opening (of some ceremony). In SDRT terms, (4)b is connected to (4)a by Elaboration, which is different from Explanation in that Elaboration provides more detailed information while Explanation provides a reason. When a clause is connected to another one by Elaboration, the elaborating event is temporally included in the elaborated event (Asher & Lascarides 2003:260). That is, (4)b is a temporal part of (4)a.

Elaboration has a special feature, that is, the internal process of an elaborated event must be accessed. This is because an elaborating event provides details about an elaborated event, and unavoidably, the details of an event are the temporal parts of the event.

The semantics of the perfective *le* predicts that the internal process of an event presented by the perfective *le* is not accessible unless it is forced open and made accessible. Elaboration is exactly that rhetorical relation which must access the internal process of an elaborated clause. This is why the internal process of (4)a, though presented by the perfective *le*, can be accessed by (4)b.

For other cases where accessing the internal process of a clause presented by *le* is not required, the internal process of a clause presented by the perfective *le* cannot be accessed, in contrast to clauses presented by the progressive *zai* or the durative *zhe*, whose internal process is always accessible due to the semantics of these two imperfective markers[4]. For example, the temporal background provided by a event presented by the progressive *zai* or the durative *zhe* is the time of the internal process of the event, while the temporal background provided by an event presented by the perfective *le* is the time after the event is completed or terminated. That is, for an event presented by the perfective *le*, its internal process cannot be accessed unless it is required to access the internal process.

(5)   a. *na   tian   wanshang liwenxio   fa   **zhe**   gao   shao*
         that   day   night   Li Wenxio have   **zhe**/DUR   high   fever
         'That night, Li Wenxio was having a high fever.'

      b. *xiao   liandanr shao de   tong   hong*
         small   face   burn to a degree that completely   red
         'Her small face was so hot that it turned red.'

      c. *shuo   le   xuduo   huhua*
         say   le/PFV   many   nonsense
         'She murmured a lot of nonsense.'

(6)   a. *guo   **le**   qi   dian*
         pass **le**/PFV seven   o'clock
         'When 7 o'clock passes, (= after 7 o'clock)'

      b. *lese   bian buneng   xichu   qinshi*
         trash   then cannot   take out dorm room
         'trash cannot be taken out of dorm rooms.'

(5) and (6) demonstrate the difference of the temporal background provided by an event presented the durative *zhe* and the one provided by an event presented by the perfective *le*. In (5), both *her small face was so hot that it turned red* and *she murmured a lot of nonsense* occur when she was having a high fever. That is, the temporal background is the time for the internal process of the event presented by the durative *zhe*.

On the other hand, (6) is rather different. While (6)a also serves as a temporal background, it provides as a temporal background the time after the event is completed, that is, passing 7 o'clock is completed. This equals *after 7 o'clock*. The contrast between (5) and (6) shows that while the time of internal process of an event can serve as a temporal background, in SDRT terms, simply **Background$_T$**, this rhetorical relation does not have to access the internal process of an event, and it just uses whatever time provided as a temporal background.

(7)   a. *ta   bu   neng zai   ting supu zheban kujiao*
         she (= Li) not can   again hear Supu so   cry
         'Li couldn't stand hearing Supu crying like this any more.'

      b. *yushi   huidao **le**   ji   laoren jia   zhong*
         so   return **le**/PFV Ji   old man home   inside
         'So, she returned to Old man Ji's place.'

      c. *cong   beiru   dixia nachu   na   zhang langpi   lai*
         from   bed sheet under take out that CL   wolf skin come
         'She took out the wolf skin from under her bed sheet.'

      d. *kan   **le**   hen   jiu   hen   jiu*
         look **le**/PFV very long   very long
         '(and) she looked at it for a long time.'

(7) is different from (4) and (6) in that the repetition of *tandao* 'to talk about' in (4) indicates Elaboration and the temporal phrase *7 o'clock* in (6) indicates Background$_T$. However, there is nothing in (7) indicating any rhetorical relation. Native speaker's intuition about (7) shows that (7)b, (7)c and (7)d are three events that occur in sequence, that is, (7)d occurs after (7)c, which, in turns, occurs after (7)b. In SDRT terms, these three clauses are connected together by Narration. The temporal relation of this kind is named advancing the narrative time.

The semantics of the perfective *le* can naturally allow for advancement of narrative time. As argued in Wu (2003a, in press), the perfective *le* presents, as a whole, the part of an event from its starting point to its final endpoint. Since an event presented by the perfective *le* is either terminated or completed, another event can take place, following it. This is why advancing narrative time does not require any indication. It is a natural consequence of the semantics of the perfective *le*.

The three discourses discussed above clearly show that the perfective *le* does not influence temporal relations directly, because a clause with it does not have a fixed temporal relation with an adjacent clause. Instead, the three discourses prove that the perfective *le* indirectly influences temporal relations via rhetorical relations, i.e. it provides a default rhetorical relation and constrains when the internal process of an event it presents can be accessed.

3. AN SDRT ACCOUNT. In Section 2, two points have been argued and demonstrated. First, the perfective *le* provides Narration as a default rhetorical relation which connects a clause with *le* to a clause adjacent to it. Secondly, only when a clause with *le* is connected to a clause following it by Elaboration, i.e. the clause with *le* is an elaborated event, can the internal process of an event presented by *le* be accessed. In no other case can the internal process of an event presented by *le* be accessed. That is, the time provided by an event presented by *le* as a temporal background is the time *after* the event is completed, rather than the time of the internal process of the event. All of the generalizations are formalized below.

(8) a. Axiom for the Perfective *le*
  $(?(\alpha, \beta, \lambda) \wedge le(\ldots)(\alpha)) > Narration(\alpha, \beta, \lambda)$
 b. Constraint on *Elaboration*
  $(\text{part\_of}(e_\beta, e_\alpha) \wedge le(\ldots.)(\alpha) \wedge ?(\alpha, \beta, \lambda)) \rightarrow Elaboration(\alpha, \beta, \lambda)$
 c. Meaning Postulates for Rhetorical Relations
  c1. $\Phi_{Background_T(\beta, \alpha)} \Rightarrow (le(\ldots)(\alpha) \rightarrow (e_\alpha < t \wedge \text{overlap}(e_\beta, t)))$
  c2. $\Phi_{Narration(\alpha, \beta)} \Rightarrow \text{overlap}(\text{prestate}(e_\beta)), \text{ADV}(\text{poststate}(e_\alpha))$[5]
  c3. $\Phi_{Elaboration_{event}(\alpha, \beta)} \Rightarrow \text{part\_of}(e_\beta, e_\alpha)$[6]

(8)a is an axiom to defeasibly infer a rhetorical relation. In plain English, (8)a says that if a clause marked as β is connected to a clause marked as α by an unknown rhetorical relation to form a discourse marked as λ, and the α clause has *le*, then by default it is Narration that connects the β clause to the α clause.

(8)b states that if an event marked as β is a temporal part of an event marked as α, the α event is presented by *le*, and α, β are connected by an unknown rhetorical relation, then this rhetorical relation must be Elaboration.

(8)c contains the meaning postulates for rhetorical relations which determine temporal relations. (C1) says that for the case where the temporal background of β is α, if α includes *le*, then the event marked as β temporally overlaps a time *t* which occurs after the event marked as α. (C2) says that for the case where β is connected to α by Narration, the prestate of the event marked as β temporally overlaps the event time of the event marked as α which is modified by a temporal adverbial. (C3) says that for the case where β is connected to α by *Elaboration*$_{event}$, then β is a temporal part of α.

The relevant clauses in (7), i.e. (7)b and (7)c, are used to briefly demonstrate how SDRT works. First, these two clauses are translated into glue logic formulae, as in (9)a. Then, after all the underspecified information is resolved, an SDRS is formed, as in (9)b. Last, the rhetorical relation is interpreted in the Satisfaction Schema for Veridical Rhetorical Relations, as in (9)c.

(9) a. π_1: le'(return_to'(Li', Ji's_home))[7]
     π_2: bed_sheet'(x) ∧ from'(under'(x)) ∧ take_out'(y, that_wolf_skin') ∧
     y = Li'/? = y
     Narration(π_1, π_2, π_0)/?(π_1, π_2, π_0)

   b.

   ┌───┐
   │ π_0 │
   │   ┌───┐   │
   │   │ π_1 π_2 │   │
   │   │ π_1: le'(return_to'(Li', Ji's_home))   │   │
   │ π_0: │ π_2: bed_sheet'(x) ∧ from'(under'(x)) │
   │   │   ∧ take_out'(y, that_wolf_skin') ∧ y = Li'/? = y │
   │   │   │   │
   │   │ Narration(π_1, π_2)   │   │
   │   └───┘   │
   └───┘

   c. Satisfaction Schema for *Narration*
      (w, f) [*Narration*(π_1, π_2)]$_M$ (w', g) iff
         (w, f) [K$_{\pi_1}$ ∧ K$_{\pi_2}$ ∧ $\Phi_{Narration(\pi_1, \pi_2)}$]$_M$ (w', g)

The ? in (9) represents underspecified information. ? = y in π_2 represents an underspecified anaphor, which is resolved to *Li* because *Li* is the only possible antecedent in π_1. ?(π_1, π_2, π_0) means that π_2 is connected to π_1 by an underspecified rhetorical relation, which is resolved to Narration, based on the Axiom for the Perfective *le* (8)a. When Narration(π_1, π_2) is interpreted in the Satisfaction Schema (9)c, the meaning postulate $\Phi_{Narration(\pi_1, \pi_2)}$ must hold, i.e. (8)c2 must hold. This interpretation fits native speaker's intuition about the temporal relation between (7)b and (7)c. The temporal relations between sentences connected by other rhetorical relations are determined in the same way.

4. CONCLUSION. This paper argues that the perfective *le* has indirect influence on temporal relations via rhetorical relations. The perfective *le* presents, as a whole, the part of an event from its starting point to its final endpoint. This semantics of the perfective *le* has two implications on temporal relations. First, under a natural, unmarked context, the event time of an event presented by *le* can be advanced. In SDRT terms, under a natural unmarked context, a clause with *le* is connected to a clause adjacent to it by Narration. Secondly, since the part of an event presented by *le* is presented as a whole, the internal process of the event cannot be accessed unless it is forced open and made accessible. In terms of the functions of rhetorical relations, only Elaboration requires accessing the internal process of an elaborated event. Therefore, the internal process of an event presented by *le* can be accessed only when it serves as an elaborated event. This paper clearly shows the explicit influence of semantics on pragmatics and demonstrates an interesting interaction between semantics and pragmatics.

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[1]   Some ideas of this paper are originally discussed in my dissertation. I would like to thank my committee members, Dr. Nicholas Asher (supervisor), Dr. Carlota Smith, Dr. Lisa Green, Dr. Bernhard Swartz and Dr. Anthony Gillies for their valuable comments. All errors and mistakes in this paper are, undoubtedly, mine.

[2]   In the literature (e.g. Rohsenow, 1978, Shi 1990, etc), it is generally agreed that there are two *le*'s in Mandarin, i.e. the verbal (perfective) *le* and the change of state (sentential) *le*. In this paper, only the perfective *le* is discussed.

[3]   For the detailed discussion of the significant point (SigP) analysis and the semantics of the perfective *le*, please refer to Wu (2003a, in press).

[4]   For the semantics of the progressive *zai* and the durative *zhe* and their influence on temporal relations, please refer to Wu (2004).

[5]   This meaning postulate is taken from Asher and Lascarides (2003:163). The ADV in the meaning postulate is to take care of situations where the second event does not occur immediately after the first event. For example, in *John went home two hours after his classes were over*, the *go home* event does not occur immediately after the classes were over; instead, it occurs two hours after the classes were over.

[6]   In Wu (2003b), two kinds of Elaboration are distinguished, Elaboration$_{EVENT}$ and Elaboration$_{OBJ}$. They are elaborations on events and objects respectively. These two Elaborations have different constraints on temporal relations. Please refer to Wu (2003b) for more details.

[7]   The ways of representing possessives here and of representing demonstratives below are a simplification.

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INTERCONNECTIONS
BETWEEN LANGUAGE
AND THE WORLD

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MILITARY METAPHORS OF SUCCESS AND FAILURE IN CONVENTIONAL AND PEACE OPERATIONS

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EVERY MORNING IN RECENT MEMORY, Americans have awakened to news of the fighting in Iraq, and the first order of business is usually the number of US troops killed or wounded in a recent attack. While the events are undeniable, they represent the impact on a very small number of the troops deployed in the region. This begs the question, what are the other 140,000 soldiers in the region doing? Many soldiers believe that the popular media's focus on soldier deaths stems from dissatisfaction with the current administration or from its prejudice against the military. However, the problem may be not just political or ideological, but conceptual in nature.

This struggle seems to be between two types of missions, conventional combat operations and the resultant deaths, which the media focuses on, and peace operations, which constitute the activities of most soldiers in the region. The difference between the two lies not only in the goals of the activities, but their physical event shapes and how they conform to the source domains for common metaphors for success and failure. Combat operations, which include attacking enemy forces and defending key terrain, fulfill our expectations for the source domain of metaphors for success. By contrast, success in peacekeeping operations, which includes providing stability, building the local infrastructure, and relinquishing power to a local government, fulfills our expectations for metaphors of failure. As a result, it is difficult to adequately portray success in peace operations.

1. CONCEPTUAL METAPHOR AND LANGUAGE. One assumption that many scholars of language have held is that language is only meaningful in terms of truth conditions, that is, statements only have meaning if they can be proven true or false (Lakoff 1987:167). From this perspective, metaphor, which represents one thing in terms of another, is merely a literary device. Metaphor, therefore, has been seen as 1) a phenomenon of language and 2) an exceptional use of language distinct from normal, truth-conditional uses (Lakoff 1993:202).

However, theorists like George Lakoff, Mark Johnson, and Mark Turner have disputed this notion of metaphor. Their research demonstrates that metaphor, far from being exceptional, seems to pervade so-called literal or ordinary language. One example is the conceptual metaphor, LONG-TERM, PURPOSEFUL ACTIVITIES ARE JOURNEYS (Lakoff & Johnson 2000:197). Fluent speakers of English often conceive of success and failure in careers, relationships, and other human activities in terms of physical movement, as in (1):

(1)   a. Jay's relationship with Anna seems to be moving very quickly.
        b. He's clawed his way to the top.
        c. He's going nowhere in his career.
        d. She's making steady progress towards her degree.

Other persistent metaphors include TIME IS MONEY, in which minutes and hours
are represented as material assets that can be saved, spent, or wasted, and Theories
Are Buildings, in which systems of thought are conceived of as physical structure
(Lakoff & Johnson 1980:8, 46; Grady n.d.:1).

The title of Lakoff and Johnson's 1980 *Metaphors We Live By* is in itself an argu-
ment. The authors claim that people not only speak about and think of time as a
resource, they behave as if it is, scheduling appointments closely together to 'save' it,
and admonishing others who engage in nonproductive activity for 'wasting' it, as if
it really were a physical resource (Lakoff & Johnson 1980:8). Similarly, not only do
many people speak and conceive of their endeavors in terms of physical journeys,
they live their lives according to those terms as well. When people plan to achieve a
purpose, such as owning a home or throwing a surprise party, they set goals, lay out
paths to them, and measure their progress towards them.

The theory of conceptual metaphor holds that metaphor is not a linguistic phe-
nomenon, but a cognitive one in which humans conceive of one experience, the
target domain, in terms of another, the source domain (Lakoff 1993:206-07). Struc-
tures of relationships from bodies of knowledge serve as the means by which other,
often very different notions are understood, remembered, and acted upon (Lakoff
1993:206). These domains of experience, or frames, and the correspondences between
them, or mappings, are basic tools of human cognition.

Understanding the meaning of a metaphor of the type LONG-TERM PURPOSEFUL
ACTIVITIES ARE JOURNEYS in the example 'She's going through a rough patch, but
the rest of the pregnancy should be smooth' depends on understanding the target
domain of pregnancy in terms of the source domain of physical movement towards
a destination. The concept of a domain is best explained through the theory of frame
semantics put forth by Fillmore (1982). His work proposes that theories of semantics
that depend on aggregates of features to define a word seem inadequate, that the
meaning in words lies in the connections they have to other concepts, and that these
connections together form a kind of frame (Fillmore 1982:119, 131–32). A semantic
frame 'provide[s] an overall conceptual structure defining the semantic relationships
among whole "fields" of related concepts and words that express them', making a sin-
gle definition the tip of a semantic iceberg (Lakoff & Johnson 1999:116). The domain
or frame of a physical journey entails a great deal of background information to be
truly comprehensible. It includes a body capable of motion, physical space, a physi-
cal location as a destination, and a path towards that location along which the body
moves. When speakers use and understand metaphors, they find and exploit corre-
spondences between two frames of experience. For instance, between the frame of
a physical journey and that of a pregnancy, the path of the journey corresponds to

the entire gestational period, and rocky parts of the path to the first trimester, when mothers typically experience nausea and tiredness. These systematic correspondences, called mappings, depend on thinker's abilities to find similarities between sometimes greatly different domains (Fauconnier 1997:1).

2. METAPHORS OF SUCCESS. In English, the metaphor LONG-TERM, PURPOSEFUL ACTIVITIES ARE JOURNEYS is often extended to bring meaning to the nature of a life or a particular endeavor. Because the destination of a journey is typically in front of the traveler, moving forward is often a metaphor for getting closer to achieving a goal, that is, for the state of being successful. This physically grounded metaphor includes such expressions as those in (1).

While moving physically forward represents one aspect of success, namely the steps to achieve it, another aspect of success is the inherently competitive nature of many endeavors, such as business and academia. As the last example demonstrates, only a limited number of strivers can earn top honors. Even in inherently noncompetitive domains of human experience, such as illness, people say of someone who has been cured of cancer, 'He beat the odds'. Metaphors of success often entail not only moving forward, but doing so while competing against others.

Another common metaphor of success is ACHIEVING A PURPOSE IS ACQUIRING A DESIRED OBJECT, in which the characteristics of physical possession are mapped onto the domain of meeting a goal (Lakoff & Johnson 2000:197). Examples include:

(1)   a. She has the fellowship in the palm of her hand.
      b. He got his hands on an ideal location for his new home.
      c. They embraced the opportunity to travel to Asia.

This metaphor has complex correspondences with is LONG-TERM, PURPOSEFUL ACTIVITIES ARE JOURNEYS. Upon arriving at a destination, the traveler occupies a physical location on the ground, upon which only he can stand. Similarly, a person who possesses an object can typically be the only one holding it. A common way of conceiving success is moving forward while overcoming obstacles, beating competitors and arriving first at an exclusive location to acquire a prize.

3. THE FORCE DYNAMICS OF COMPETITION. Leonard Talmy's notion of force dynamics (**Figure 1**, overleaf), in which he explains the relationships between opposing forces in the physical world, and the metaphoric extension of those dynamics onto such domains as the psychological and the social, gives further insight to the action between the entities in this frame. In Talmy's model, there are two force entities, the agonist and the antagonist. Each has an intrinsic force tendency, either towards action or towards rest, and a level of strength in relation to the other, stronger or weaker. The total interaction of the force tendencies and relative strengths results in the system as a whole either moving, or remaining at rest (Talmy 2000:413–14).
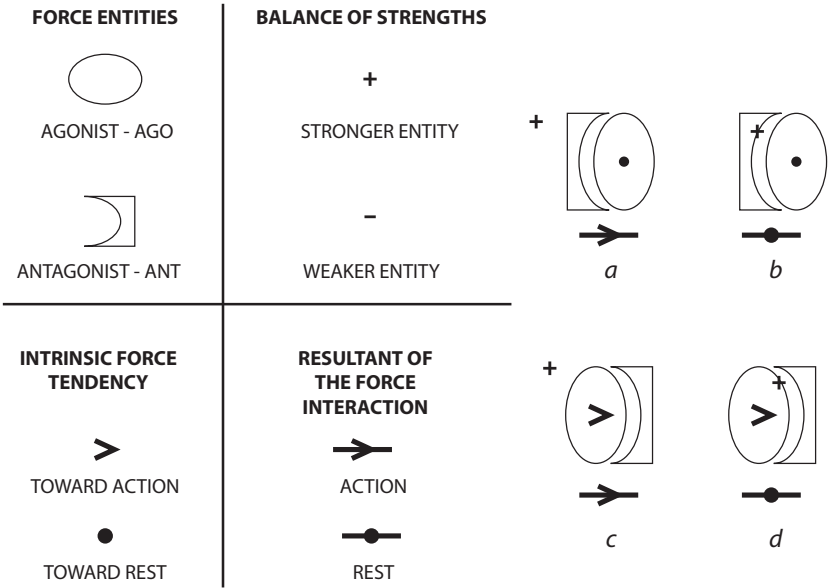
Figure 1. *Force Dynamics (taken from Talmy 2000:413).*
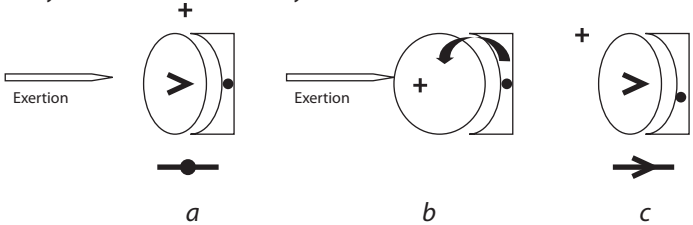
Figure 2. *Success.*

These examples illustrate steady-state systems. But in the real world, entities often increase or decrease in strength, and systems can change their overall movement. Such is the case with the source domain of success. This kinesthetic event is a fairly complex pattern of force dynamics, one that Talmy illustrates in three phases (see **Figure 2**); an initial phase in which the agonist exerts force but is initially weaker than the antagonist, a second stage in which the agonist gains in strength relative to the antagonist while continuing to exert force, and a final phase in which the agonist prevails, the antagonist succumbs, and the system moves in accordance with the agonist's exertions (Talmy 2000:436).

While Talmy's force dynamics is based on the interaction of physical forces, it is useful for describing metaphors of success in social or mental activity as well. For instance, the preceding force dynamic could describe the physical act of opening of a window, the social triumph of suffragettes over the pressures of discrimination against women, or the mental event of completing a dissertation in the face of overwhelming circumstances.
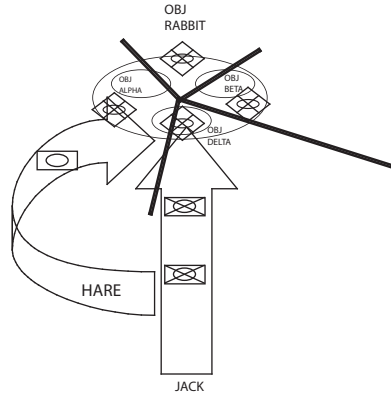
Figure 3. *Offensive operation.*

4. WARFARE, DOCTRINE, AND SUCCESS. While the United States Army is in many ways a distinct discourse community, it is not absolutely or even radically different from the civilian community as a whole. Soldiers enter the military only after eighteen years of enculturation in larger civilian society. It is therefore no surprise that the Army shares the same conceptual metaphors for success and failure as the population from which its soldiers are drawn. Expressions such as 'She's ahead of the power curve', could apply to the top student in the class, an astute politician, or an insightful military planner and strategist.

Much of the Army's institutional thought can be found in its doctrine. Army doctrine both codifies sanctioned knowledge and perspectives and, since it is the basis for training, dispenses them to members of the institution. The keystone manual, FM 3.0, *Operations*, is so designated because it lays out the principles by which all other types of missions are conceived.

The Army exists to fight conventional, large scale wars, and this primary mission has been the impetus behind the structure of its forces, the development of its weapons and supporting materiel systems, and the training of its soldiers. While other, nontraditional missions have eclipsed conventional warfare, the ability to conduct war remains the conceptual ground for much of the Army's doctrine. As FM 3.0 states, 'Fighting and winning the nation's wars is the foundation of Army service—the Army's nonnegotiable contract with the American people and its enduring obligation to the nation' (U.S. Army 2001:1–2). Offensive operations, then, are the functional and conceptual foundation for the Army's understanding of success.

A typical offensive operation is illustrated in **Figure 3**. In this scenario forces are attacking Objective Rabbit, which is the hub of a network of roads. The attacking forces have split into two, with one conducting a frontal attack to engage and pin down the enemy's strongest forces, and the other conducting a flank attack to pit its strength against the enemy's weakness. Both prongs of the attack move swiftly, so that the defenders cannot lay down a base of suppressive fire or commit their reserve, either of
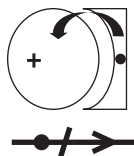
Figure 4. *We overcame the enemy at his border (Talmy 2000:420).*

which would slow the attack and endanger its success. The attack ends with the attacking forces seizing and holding the objective with enough combat power remaining to repel possible counterattacks and quickly continue moving forward, if ordered.

The ideal attack, then, is one in which the attackers move forward towards a key piece of terrain, attacking in such a manner that they gain positional advantage over the defenders. This enables the attackers to drive them off the objective and seize it while retaining enough of their own strength to continue forward movement. The frame of an attack entails the elements of forward movement, possession, competition, and restrictive economy. The defining act of conventional warfare, the offensive, is the physical embodiment of the source domains for common military metaphors of success.

In terms of Talmy's force dynamics, a successful attack is the result of a shift in the relative strength between the agonist, the attacker, and the antagonist, the defender. Talmy cites a particular usage of the word overcome as exemplifying this dynamic, as illustrated in **Figure 4**.

Like the second phase of the source domain for success, the agonist's relative strength increases, and, like the final phase, the system as a whole moves in accordance with the agonist's tendency. Also like the source domain for success, the greater the force the agonist must overcome, the more overwhelming the victory. However, unlike the target domain of actual success, in which others would not necessarily fail as a result of one person's success, in this understanding of combat, the enemy's failure is a necessary, and almost sufficient condition of the attacker's success.

There is another key difference between military and civilian concepts of success, however. While many people *conceive* of success in terms of physical movement, in most instances, they don't usually *act* in accordance with those concepts; someone endeavoring to learn Spanish does not physically relocate to closer to Spain every time he achieves a new level of fluency or take textbooks from other language students and carry them around. In the successful execution of a conventional offensive operation, however, a military force actually does displace, move forward, and take possession of new terrain away from an enemy. Army offensive operations fulfill common expectations for the source domain of metaphors of success in a concrete and material way that other kinds of goal-oriented activities do not, bringing a whole new dimension of meaning to the concept of 'a metaphor we live by'.

5. METAPHORS OF FAILURE. Metaphors of failure share the same source domain as metaphors of success, movement through space, but, rather than moving forward quickly, someone who is failing either moves very slowly, stagnates, or even travels

backwards. Hence, A PURPOSEFUL LIFE IS A JOURNEY produces such common metaphors for failure as those in (3):

(3)   a. She broke up with him because their relationship was going nowhere.
       b. Their attempts at discussion regressed into petty bickering and name-calling.
       c. She's barely keeping up with the demands of work, family, and school.
       d. He's behind the power curve.

In addition, one who fails is unable to either acquire or retain a desirable object, seen in such common expressions as 'He let a wonderful relationship slip through his fingers', or 'She can't get a grip on her career' (Lakoff & Johnson 2000:197). In fact, the term 'loser' is synonymous for someone who fails. The source domain for metaphors of failure entails the opposite conditions of the source domain for metaphors for success. And, because success is often represented in terms of competition, one person's success entails the failure of others.

The event shape of failure, then, is of someone who struggles to move forward and acquire a desired object, but instead moves slowly, falling behind his competitors. As a result, he cannot acquire or retain the desired object and ends up stagnant and empty-handed. Not surprisingly, this event shape describes not only common conceptualizations of failure, but the force dynamics and actual event shape of a failed offensive operation, a stalled or thwarted attack. When an attack fails, there are two possible outcomes (**Figure 5**, overleaf). Either the agonist fails to overcome the strength of the antagonist and the system remains at rest, as in A, or the agonist is overpowered by the antagonist himself, as in B.

The first is the force dynamic of a stalled offensive, while the second is that of a successful counterattack by the defense. In either case, the defender retains possession of terrain, and the attacker ends up weaker in both relative and absolute terms. Both spell defeat and death for the attacker.

Because war contains so many of the secondary metaphors of the event structure metaphor, it is itself a rich source domain for our understandings of success and failure. Some examples include:

(4)   a. She routed the competition.
       b. They battled hard to win the Midwest market.
       c. The marketing department blew all its ammunition on two major ad campaigns.
       d. Their status in the field was reduced to rubble after the debate.

Like all metaphors, these give us only a partial representation of the target domain, and they highlight some aspects of it while minimizing others. Like the conventional attack discussed above, the logic of the image schema, namely the restrictive economy and contrary outcomes, is expressed in the fact that the failure of the competition usually entails the success of the victor. The difference is of course that these features are necessary parts of these source domains' frames, not of the target domain's.

Outcome of Failure A

Outcome of Failure B
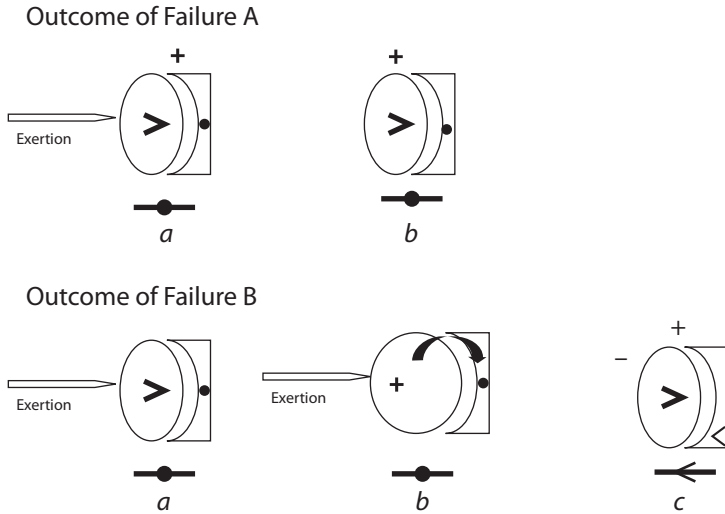
Figure 5. *Force dynamics of failure.*

Because the contradictory image-schema logic of being in front and in possession are so heavily ingrained in both human conceptual systems and in the English language, and because this frame is often used to characterize the target domain of success, it may be difficult to understand measures of success for activities such as peace keeping operations.

6. PEACE OPERATIONS. The goals of peace operations are more laudable than those of conventional warfare, but as many recent operations have demonstrated, they are often more difficult to attain. They are defined as 'multiagency operations involving diplomatic and humanitarian agencies, with military support. They may be conducted to prevent or control a conflict, in support of a peace settlement, or in response to a complex emergency' (U.S. Army 2003:4–2). Peace operations have become an increasingly larger part of the U.S. Army's mission.

Peace operations, like offensive operations, are also detailed in Army doctrine. Their manual, FM 3.07, *Stability and Support Operations*, details the complexity of such operations by describing the radically different frame within which peace operations take place. In addition to their dealings with the local nationals and the warring factions,

'Army forces will operate with international organizations, nongovernmental organizations (NGOs), and other agencies participating in the peace process. The success of the overall peace operation depends in part on the degree of cooperation among these various actors. In PO, there is neither an enemy nor a military victory' (U.S. Army 2003:4–5).

In contrast to conventional operations, which have two primary agents, a peace operation can have potentially dozens of agents. In addition, rather than competing with one another, all the actors have a common goal, the successful stabilization and long-term peace of the embattled country.

In an ideal peace operation, peacekeeping forces move into a country only after an agreement has been brokered between the adversarial factions. To enforce the agreement, the military force uses its power to deter the factions' ability to attack one another by physically separating the belligerent parties, conducting inspections of weapons storage facilities, and launching raids on suspected terrorists. While these peace enforcement actions are going on, numerous organization work to establish conditions for lasting peace.

The frame of peacekeeping presents a different conceptualization of success, one in which agents cooperate rather than compete. Such concepts don't necessarily contradict the metaphors of success discussed above, but complement them by highlighting different aspects of the target domain of success. Common examples of noncompetitive success include successful marriages, in which both partners enjoy a fulfilling relationship, or successful classrooms, in which teachers and students work together to create a fruitful learning environment. In fact, the metaphor LONG-TERM, PURPOSEFUL ACTIVITIES ARE JOURNEYS can productively represent these endeavors through slight shifts in the mappings between target and source domains:

(5)   a. Their marriage has been a long and rich journey.
       b. Their instructor led them across the pitfalls of theory to the firmer ground of systematic analysis.
       c. Raising a child with Down's syndrome is like a trip through Denmark instead of Sweden; the voyage may be different, but no less joyous.

The complexity of peace operations, while daunting, is not the only obstacle to conceptualizing their success. Particularly difficult is the event shape of the military force's actions over the course of the mission. They begin with operations fairly close to those of a typical conventional combat mission, in which they use force or the threat of force to gain control of their mission area. Once stability is established, the force, in concert with the other agents, conducts civil military operations, missions that

'focus on empowering civilian agencies and organizations to assume full authority for implementing the civil portion of the peace effort. As the operation progresses, civil organizations should assume greater responsibility for civil functions and require less assistance from the military force' (U.S. Army 2003:4–18).

Over the course of time, as the local government assumes more responsibility for the country's affairs, the peacekeeping force reduces its presence in the country, by both relinquishing responsibilities and decreasing the number of troops. Once the local
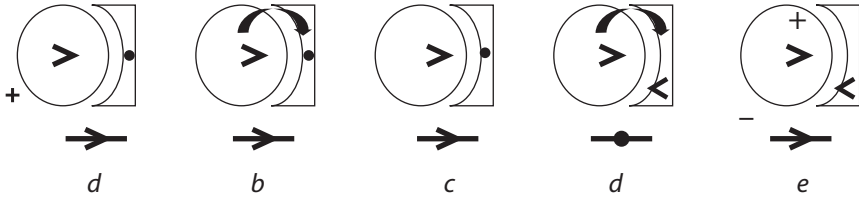
Figure 6. *Success in Peace Operations.*

nationals can maintain the stability and infrastructure, the military force hands over control to the civilian leaders, leaves the country, and redeploys stateside.

The long-term event structure of a peace operation is a particularly complex force dynamic pattern, with at least five phases (**Figure 6**). In the first phase, the peace-keeper, the agonist, is stronger than the adversary forces, or antagonist, and the system as a whole moves in accordance with his tendency. In the second phase, the agonist's strength diminishes relative to the antagonist's, slowing the system's movement. In the third phase, equilibrium is reached between the two entities, and the system comes to a rest. In the fourth phase, the antagonist gains in relative strength until, in the final phase, the system moves in accordance with his tendency, and the agonist is the one overcome.

This event shape poses two serious problems for those carrying out peace operations. First, as our operations in Bosnia and Kosovo demonstrate, completing a peace operation often takes years, during which time the soldiers may repeat many of the same tasks over the same terrain, making visible progress in the lives of the local nationals difficult to discern, and making the soldiers feel as if they, and the mission that they carry out, are stagnating. That is, they believe they are failing. Secondly, over the long term, a successful civil military effort has the physical event shape of a with-drawal, which fulfills expectations of the source domain for failure yet again.

The conditions for success and failure for peace operations and conventional combat are summarized in **Table 1**. The military force's success in peace operations, marked by relinquishing control, moving backwards, and diminishing presence, con-form to our expectations for the source domain of metaphors of failure. Further-more, the conditions for the success of local nationals are characterized by increasing control, moving forward, and growing presence, conforming to our expecations for the source domain of metaphors of success. That is, the conditions for success for local nationals in peace operations conform to the conditions for success for a mili-tary force in offensive operations, while the conditions for the military force in peace operations conform to the conditions for failure in offensive operations.

7. AN UNFORTUNATE EXAMPLE. The physical event shape for peacekeeping fulfills so many of our expectations of the source domain for failure that even people who clearly advocate the mission have difficulty expressing what success looks like. In a recent edition of the *Army Times*, Donald Rumsfeld's strategy for U.S. forces to move

Local Nationals in Peace Operation	Military Force in Successful Attack	Military Force in Peace Operation	Military Force in Failed Attack
Possession of terrain More power Progress in development Possession of control	More terrain More troops Has moved forward Can continue to move forward	Relinquish terrain Fewer troops Redeploys stateside Give up control	Less terrain Fewer troops Has moved backwards Can no longer move forward

Table 1. *A comparison of peace operations vs. conventional combat.*

the Iraqi government was quoted as a headline: 'Leading From Behind; U.S. security forces gradually passing baton to Iraqi authorities'(Crawley 2004:10).

The text of the story has a perfectly legitimate explanation for this seeming paradox. The strategy involves putting the responsibility for maintaining order in major Iraqi cities on the shoulders of the newly trained local police forces; U.S. troops in the form of quick reaction forces would be prepositioned at strategic locations that would enable them to deploy quickly to support the local police in case the situation becomes too large for them to handle (ibid). This way, the U.S. would 'lead' metaphorically by instituting the strategy and training the host nation police force, but would be 'behind' literally by being physically located away from initial contact, and metaphorically by having the local authorities respond to any situation first.

Despite its perfectly valid and laudable intention of giving the Iraqi police forces authority over their people and responsibility for their actions, Rumsfeld's characterization of his plan has many other problems. Besides being oxymoronic, another problem with his characterization is the many ways in which 'being behind' as a source domain maps onto different target domains.

In the domain of courage, being 'behind' is a metaphor for both physical cowardice ('He's hiding behind his mom's apron') and moral cowardice ('She hid behind the regulation to avoid taking responsibility for her actions'). Whether the danger is physical or emotional, concealing oneself is not just a matter of self preservation; it entails doing so and (or even worse, by) allowing someone else to take the brunt of the blow instead. Also, as has been discussed, to be behind is to be the loser ('He's behind the times') or the injured, weaker, or disadvantaged party ('No child left behind').

What is particularly striking is that so poor a metaphor is invoked by the leader of the US Defense department, and quoted by a newspaper serving the needs of the American soldier—in other words, in a context that is as supportive of the mission and the troops as any one could find anywhere. In fact, in close examination, the metaphor reverses the intention of the policy it expresses by highlighting the role of the American forces rather than that of the Iraqis.

8. CONCLUSION. Success in peace operations eludes representation in the current press. The elections in Afghanistan, in which Afghan women defied the Taliban's threats of death and mutilation, received little widespread attention (*Detroit News* 2004). While that country has a long way to go on the road to self-sustainment, the overthrow of the Taliban and steady progress of the country can only be characterized as an ongoing success. Unfortunately, widespread coverage of success in peace operations tends to focus not on the actions of the local nationals but rather on those of the military, who, as this analysis shows, is only one agent in this frame. The media is missing a great opportunity to make a vital contribution to that peace. By highlighting instead the efforts of the people who struggle to extricate themselves from war and build peace in their homelands, coverage of peace operations can help gain them the support they need to accomplish it.

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LANGUAGE LEARNING INPUT AND
INPUT FOR LEARNING TO COMMUNICATE

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CENTRAL TO MANY ASPECTS of second language acquisition (SLA) theory is the work of Krashen (e.g. 1985, 2003). Of particular relevance to the topic of the current paper are his Input Hypothesis (1985 *passim*) and the claimed Natural Order of Acquisition, which he also refers to as the Natural Order Hypothesis (2003:5–6). The Input Hypothesis states that language acquisition results from the learner's having received 'comprehensible input' (Krashen 1985 *passim*, 2003:4–6). In his treatment of the Natural Order Hypothesis, Krashen describes the stages of language learning in terms of the purported acquisition of morphosyntactic features (2003:1–2) such as copula, present progressive, and passive voice. In his scheme, any given stage is referred to as '*i*' and the next stage as '*i+1*'.

1. ALL LANGUAGE LEARNING IS IMPOSSIBLE, EPISODE ONE. Given Krashen's conception, the duration which a learner will require to advance from stage *i* to stage *i+1* is the time t_i. For the sake of simplicity in the following argument, let us assume a constant rate of change from the moment the learner's grammar is at state *i* to the moment it has reached state *i* + *1*, recognizing that the reality is, of course, more complex (see **Figure 1**, overleaf, in which I represent the learner as a tortoise).

After the period $t_i/2$ has elapsed, the learner will be halfway from *i* to *i+1*. Assume that in each additional step of our analysis, the learner progresses halfway from the current point to the goal. Thus on the second step he will have progressed three quarters of the way from the starting point *i* to the goal of *i+1* (see **Figure 2**, overleaf). From the three-quarter point, the learner will progress only one-eighth of the way to the goal of *i+1* in half of the time remaining, and so on. Only after an infinite number of such steps will the learner finally reach *i* + *1*. Thus, since learners do not have an infinite amount of time to proceed from *i* to *i* + *1*, it is logically proven that All Language Learning Is Impossible. I call this 'The Tortoise's Paradox'.

2. THE RELEVANCE (AND IRRELEVANCE) OF (IL)LOGICAL PROOFS. Some readers will recognize in the above a fairly transparent variant of Xeno's Paradox (see, for example, Hofstadter 1989:29–32), the ancient proof of the philosopher Xeno which purports to show that All Motion Is Impossible. The problem with this sort of proof, as Hofstadter demonstrates, is that it confuses properties of the external world and what are really irrelevant features of a particular way of describing the world: the infinitude of the chosen **mode of calculation** of the time for a learner to get from *i* to *i* + *1*, for example, does
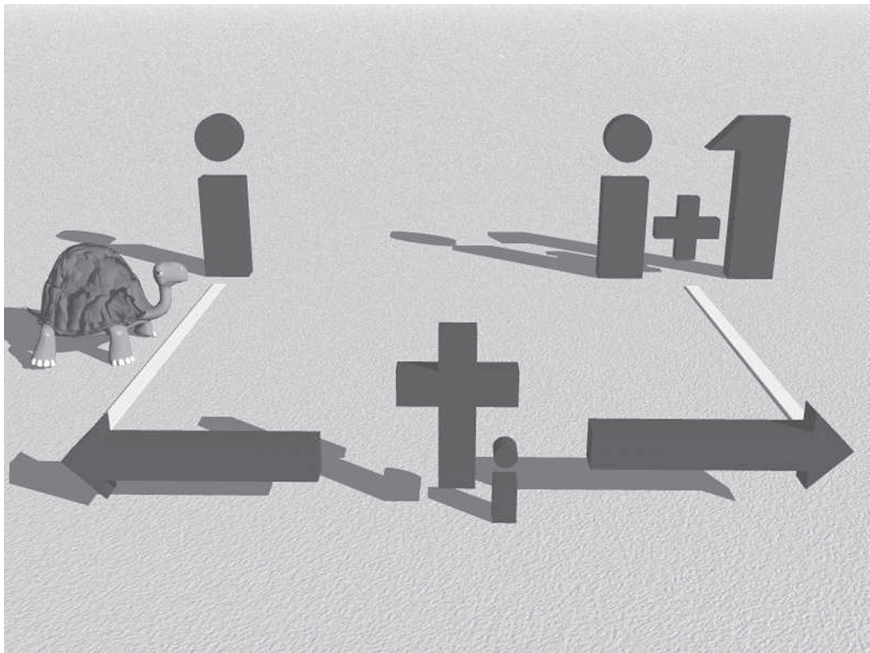
Figure 1. *Krashen's* i *and* **i+1**.
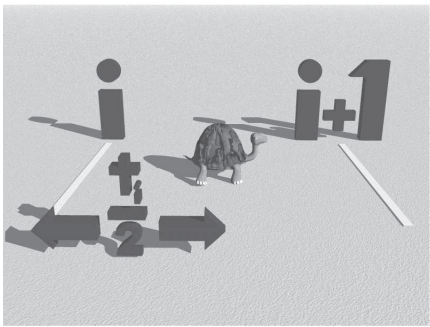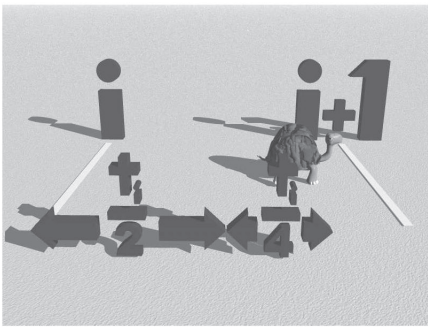
Figure 2. *Infinite iterations require infinite time.*

not reflect any aspect of external reality. The reader probably felt a twinge of suspicion when I stated that we should assume constant rate of change from *i* to *i + 1*. Indeed, such suspicion is warranted. The above proof that 'All Language Learning Is Impossible' assumes a constant rate of change in order to make its further peculiar assumption that the change must be calculated by an infinite number of steps, each reduced by half. Thus we see that the relevance of an abstract logical proof to a state of affairs in the real world depends upon the quality and nature of the assumptions made.

| 3.1 | utterance | → | A | → | structural description |

| 3.2 | primary linguistic data | → | B | → | generative grammar |
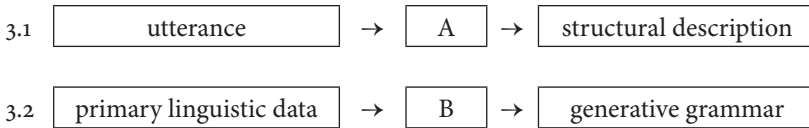
Figure 3. *Chomsky's (1964:26) assumed devices for language processing (3.1) and language acquisition (3.2).*

3. THE NATURE OF LANGUAGE LEARNING INPUT. Chomsky (1964:26) assumes a distinction between 'two kinds of *abstract* device, the first serving as a perceptual model [i.e. for "language understanding"] and the second, as a model for acquisition of language' (**Figure 3**, parts **3.1** and **3.2**, respectively).

It has been made clear over and over that the 'primary linguistic data'—also referred to in the literature as 'the available evidence', 'environmental input', or simply 'data'—consists of *language*. Saleemi (1992), for example, reviews work by Chomsky, Chomsky and Miller, Fodor, Pinker, Wexler, and Culicover, in which this assumption is shared. The same assumption is also made explicit by Morgan (1986) and White (1989), among many others. We see it shared throughout most research in SLA, e.g. Cook (1993), Sharwood Smith (1994), Gass and Selinker (2001). We see it in the contributions to one volume edited by Gass and Madden (1985) and another edited by Flynn, Martohardjono, and O'Neil (1998). Even Krashen makes the assumption (e.g. 1985:2,100). In short, the idea that input for language learning consists of some sort of grammatical 'data'—and only this—is nearly ubiquitous. Sharwood Smith (1985:402, fn. 1) explains it this way:

> It is important to distinguish input to the *comprehension system* where the listener / reader employs a whole network of linguistic and non-linguistic knowledge sources, and the input to the language acquisition, i.e. 'grammar constructing' device, which will *not* be coextensive with the first type of input.

4. ALL LANGUAGE LEARNING IS IMPOSSIBLE, EPISODE TWO. The assumptions underlying **Figure 3.2** are foundational to the well-known and highly influential 'unlearnability' proof of Gold (1967). Gold demonstrated, given the kind of input assumed by Chomsky's language acquisition device (LAD) and the kind of output it is assumed to produce, a context-sensitive grammar (the kind Chomsky has consistently argued natural language requires), that grammar is unlearnable. Thus the claim that there is a 'Poverty of Stimulus' depends on Gold's unlearnability proof, and so in turn does the existence of what is variously called 'Plato's Problem' (or 'Chomsky's Problem'). Chomsky himself has recently explained it in these terms (2000:3-4):

> Human language is based on an elementary property… Children do not learn this property; unless the mind already possesses the basic principles, no amount of evidence could provide them.

The unlearnability proof has provided the justification for Universal Grammar ('the basic principles' which 'the mind already possesses'), via a line of reasoning conveniently summarized by Cook (1993:207-08):

(1) A speaker knows a certain feature of his language.
(2) Given only the primary linguistic data, this feature is provably unlearnable.
(3) The language feature cannot have been learned from experience.
(4) The language feature must be built-in to the mind.

In step (4) of the argument, we see the creation of Universal Grammar as a mechanism to explain how the speaker knows the unlearnable: language does not need to be learned because it is innate.

5. THE RELEVANCE OF THE LOGICAL PROOF BASED ON GOLD (1967). Why is the input for language learning restricted to 'primary linguistic data', i.e. 'language input'? Consider Klein's (1986:44) 'Chinese Room' anecdote:

> Suppose you were locked in a room and were continually exposed to the sound of Chinese coming from a loudspeaker; however long the experiment continued, you would not end up speaking Chinese… What makes learning possible is the information received *in parallel* to the linguistic input in the narrower sense (the sound waves).

By means of this simple thought experiment, Klein shows that the relevant input in fact *cannot* be limited to 'linguistic input in the narrower sense'. Thus, the foundational assumption that the input for language learning must consist solely of 'primary linguistic data' is clearly false.

In short, there is no 'Poverty of Stimulus' unless we assume it. Without 'Poverty of Stimulus', there is no 'Plato's Problem', no need for UG. The assumption that input consists of 'primary linguistic data' is at the bottom of a house of cards.

6. ALL LANGUAGE LEARING IS IMPOSSIBLE, EPISODE THREE. Carroll (2001) attacks Krashen's Input Hypothesis by showing that 'comprehensible input' cannot be responsible for language learning. She says (2001:9) his claim

> that intake is comprehended speech is mistaken… [C]omprehending speech is something which happens as *consequence* of a successful parse of the speech signal. Before one can successfully parse the L2, one must learn its grammatical properties.

In other words, the input you hear is not 'comprehensible' as language unless you already know it; thus 'comprehensible input' (that is, language comprehension) cannot be involved in language learning. She concludes therefore, that 'Krashen got it backwards!'

7. WHAT IS WRONG WITH CARROLL'S ARTUMENT? But Krashen did not 'get it backwards'. Rather, Krashen is wrong to the degree that he shares Carroll's false assumption that the relevant input consists of 'primary linguistic data' and nothing more. We know that this assumption is false from Klein's 'Chinese Room' thought experiment, because other input is required. Thus a critical flaw in Krashen's reasoning is this false assumption.

What about Carroll's claim that comprehension cannot be involved in language learning? Again, Klein's thought experiment provides an important hint. Note that he did not refer to 'primary linguistic data' or to the input as 'language data'. Rather, he associates 'linguistic input in the narrower sense' with 'the sound waves' produced by someone speaking (1986:44). He emphasizes the absolute requirement that other information be 'received *in parallel*' (ibid.). Klein thus shows that the relevant input consists of *the full range of sensory experience available to the learner* at a given time.

What we are actually seeing, then, are changes in the properties of a learner relevant to his ability to communicate, resulting from his interactions with his environment. We conventionally describe these changes and the behaviors that result from them in terms of 'language learning' (or 'language acquisition'). But, as Carroll (2001) shows, no 'language' is present in the input, and no language takes part in the process unless the learner already 'knows' it. This is consistent with what Saussure pointed out nearly a century ago, that language is not 'given in advance', but arises in the point of view of the observer (1959:8). When we see language in speech, it is a projection of properties of the observer onto the external world being observed (see Yngve 1996:2). When Klein (1986) refers to 'linguistic input in the narrower sense' and thereby means 'the sound waves', he avoids the unlearnability problem that arises as a result of thinking of the relevant input as consisting of language.

8. 'MEANING' AND 'COMPREHENSION'. To understand how comprehension relates to someone learning to communicate requires that we recast 'comprehension' in real-world terms. Doing this in turn depends upon being able to place the concept of 'meaning' in the real world.

Meaning can be approached in physical-domain terms by considering *communicating individuals* who are *participants* in a *linkage*, in the Hard-Science Linguistics framework of Yngve (1996). They form interlocking causal chains of events, which can be described (in one direction) as follows: (1) external changes in the environment, together with (2) internal changes of state in communicating individual [A] result in a communicative behavior by [A]; via this behavior [A] (3) alters the environment (by affecting energy flow in light, sound, and kinetic channels), propagating these effects to communicating individual [B], contributing, along with the external changes in the environment identified above, to (4) an internal change of state in [B], which might lead to (5) new behaviors by [B]. Any of (1), (2), (4), or (5) might in one context or another be associated with the commonsense 'meaning' of [A]'s communicative behavior (3).

Each of these is found in Yngve's (2003:3–6) example of Paul Revere and the signal lights, as depicted in Longfellow's poem, *Paul Revere's Ride*.

In 1775, British troops garrisoned in Boston were attempting to enforce the tax laws against the growing resistance of the colonists. On April 18 they decided to march on Concord because of reports that the colonists had been collecting arms there. This then led to the first battle of the American revolution and eventually to the colonists' declaration of independence from England on July 4, 1776. The narrative poem… tells the story of the use of signal lights to warn the countryside that the British were coming.

Revere's friend was to place one light in the tower of the old North Church if the British troops were approaching over land, two lights if by sea. Upon seeing the signal, Revere was to ride his horse through the countryside to spread the warning.

There are several commonsense notions of "meaning" which apply. Suppose a third party observer notices the unusual occurrence of two signal lights in the church tower, and asks 'what does it mean?'. A companion who knows of the agreement between Revere and his friend might answer, 'It means the British are coming', referring to an external causal event (1). The companion might also respond, 'It means Revere's friend has seen the British coming', referring to the state of the friend as a participant in the linkage (2), which is causal to the signal in the visual channel. He might also say, 'It means Revere (4) knows the British troops are coming and (5) will ride to warn everyone', referring to two different kinds of results of the signal: Revere's state of mind and consequent behavior, respectively.

These commonsense understandings of 'meaning' are quite distinct from a concept of 'meaning' in terms of 'semantics'. These commonsense notions of 'meaning' can be grounded in the real world, unlike semantics, which is an abstract system existing *only* in a mental domain.

'Comprehension', in real-world terms, can be associated with (4), the internal change of state in [B]. Part of (3) in a more typical linkage (as contrasted with the signal lights example involving Paul Revere) is analogous to what Klein calls the 'linguistic input in the narrower sense (the sound waves)'. The rest of (3)—in a typical linkage, also including gesture and facial expression, and other channels affected by all relevant parts of (1) are what Klein refers to as 'the information received *in parallel*' with the signal.

Thus Carroll makes an error when she equates 'comprehension' and a 'successful parse'; 'comprehension' in a real-world sense is a physical change in state in one of the participants as a result of linkage events. Its causes can include information in any of several channels in the linkage.

Krashen has a concept of 'comprehension' that is more grounded in the real world, as is clear when he asserts that 'comprehension' arises from a *variety* of internal and external factors (see, for example his discussion of the Input Hypothesis, renamed the Comprehension Hypothesis, in Krashen 2003:4–6). It is important to note that this claim by Krashen implicitly contradicts his explicit acceptance of the assumptions of Chomsky's view of language learning, presented in **Figure 3.2**. In particular, Krashen's claim that 'comprehensible input' results in 'language learning' means that he implicitly rejects the separation of the 'two abstract devices' in **Figure 3**.

Now, what Krashen is asserting is that language acquisition results from various external events (including, most often, someone else speaking), combined with the learner's current state—these together giving rise to the changes in the internal properties of the learner. These changes Krashen calls 'language acquisition' (2003:1)[1].

9. 'COMPREHENSION' AS ASSOCIATIVE LEARNING. The associations under consideration here are internal associations, not S→R. By considering the physiological basis of learning, we can begin to see how these changes of state occur; in other words, we can begin to establish a physical-domain model of what is happening when someone is learning new ways to communicate[2].

Learning consists of changes in the individual as a result of the structure of the individual and the individual's interaction with the environment. Johnson (1997:9) distinguishes learning from other aspects of ontogenetic change by specifying that learning involves '[i]nteractions between the organism and aspects of the environment unique to an individual, or subset of members of a species'. The mechanism of learning is another matter. At the neurological level of analysis, learning can be said to consist of certain changes in the nervous system, if they can be observed to affect behavior.

It is now generally accepted that changes in the nervous system associated with learning in primates, including humans, do not involve changes in the basic structure of the nervous system. Rather, they involve alterations in how impulses are transmitted across neural connections.

The conduction of an impulse in a neuron (nerve cell) is one-way, the output side being the axon, input being received either by a dendrite or the cell body. Output from a neuron occurs at the tip (presynaptic terminal) of its axon, via synaptic knobs (Hole 1993:344). There are different structural types of neurons, all having only one axon, and one or more dendrites: bipolar—axon and dendrite projecting from opposite sides of the cell body, unipolar—axon and dendrite projecting from the same side of the cell body, and multipolar—axon on one side, dendrites more or less opposite. Interneurons (also called association, intercalcated, or internuncial neurons) conduct impulses from one part of the central nervous system to another, and therefore are central to an understanding of learning at a neural level; they are structurally multipolar (Hole 1993:350). The impulse conducted through a neuron is electrical, but from one neuron to another, it is chemical, provided for by any of several different types of neurotransmitters. The ability of an impulse to be conducted across a synapse (the space between the axon of one neuron and the dendrite or cell body of another) is determined by the synaptic potential (Hole 1993:347). Synaptic potential corresponds to the average rate of neurotransmitter release across the synapse by the synaptic knob at the end of an axon (Lawson, 2003:35). Stated at the level of the structure and function of the central nervous system, learning involves 'a biochemical modification of synaptic strengths' (ibid:33–34). Kolb and Whishaw (1996:379–81) give a very readable explanation of the 'Hebb synapse', i.e. any of those 'synapses that undergo change during learning' (Kolb & Whishaw 1996:380).

Two properties of the organization of the central nervous system are key to providing for the complex interconnections among neurons required for higher learning: convergence and divergence. Neurons are clustered in neuronal pools; within a given neuronal pool, a neuron may receive impulses from multiple sources (on afferent nerve fibers), and these impulses may have originated in disparate parts of the nervous system—other parts of the central nervous system or parts of the peripheral nervous system. These impulses 'are said to *converge* when they lead to the same neuron' (Hole, 1993:340). In contrast,

> [i]mpulses leaving a neuron of a neuronal pool often *diverge* by passing into several other output [efferent] fibers… Such an arrangement of diverging nerve fibers can cause an impulse to be *amplified*—that is, to spread to increasing numbers of neurons within the pool. (Hole 1993:349)

Because of divergence, impulses that originate from the visual system can affect parts of the brain controlling motor activities, for example, while they are simultaneously affecting other parts of the brain as well. Because of convergence, those same signals can be coordinated with other sensory inputs, such as those from the auditory system resulting from the perception of speech. As this processing occurs, synaptic strengths are affected, and the result can involve the person learning a new way to communicate. Thus repeated co-occurrences in external events will *tend* to cause repeated strengthening of certain neural associations[3].

10. why 'input based' approaches work anyway. It is shown above that so-called 'input-based' approaches to language learning are based on false assumptions about the nature of language and the nature of input relevant to people learning to communicate. Yet such approaches seem to work anyway. Why is this?

An example of input-based teaching which accepts the major elements of Krashen's framework is the so-called Natural Approach of Terrell (1977; see also Terrell's chapter in Blair 1982). A very elementary Natural Approach lesson may contain a segment with an activity like this:

(1) This is a pencil [taking a pencil in one hand, pointing at it with the other]
(2) This is a card [taking a card in one hand, pointing at it with the other]

In both cases, the speaker's directed gaze is likely to vary among listeners, then shift momentarily to the object being held at roughly the time [ðɪs] is articulated, then back among various listeners. Such a lesson provides whole-range sensory input to the learner. The input it provides causes the learner's nervous system to make appropriate associations by effecting changes in synaptic strengths, so that the individual learns how to communicate. For example, associations are formed between (auditory) perception of the speech behavior [pɛnsɪl] and the (visual) perception of a pencil, between the perception of the articulation [kard] and the visual perception of

a card, and between perception of the articulation [ðɪsɪzə] and the more complex behaviors of holding, pointing, and eye gaze. Because the latter are already associated with neural structures that coordinate the higher-level task of identifying, an association is formed between the perception of [ðɪsɪzə] and that higher-order task.

An example like this suggests that certain properties in the input contribute to its effectiveness for learning how to communicate: (1) redundancy in the form of repeated correlation of parts of the input across sensory modalities and (2) variation within each sensory modality.

11. CLOSING REMARKS. When we frame learning how to communicate in terms of acquiring grammar, we are attempting to deal with a real-world issue in the mental, rather than the physical, domain. The unlearnability problem is a direct result. We are then faced with a choice between Scylla and Charybdis (Chomsky's position of assuming everything is already known and Krashen's self-contradictory position). To avoid such lose-lose options, we should chart a course into the physical domain. Fortunately, we can do this and bring much of value in Krashen's insights along with us.

I have a final quick word to those who steadfastly confuse Hard-Science (AKA Human) Linguistics with Behaviorism. First of all, the Structuralists whom we associate with Behaviorist influence in linguistics were in fact not Behaviorists at all; they talked frequently about the importance of stimulus-response (S→R) theory—thus trying to place their work in the physical domain, but in practice they framed their work in terms of grammar—which is in the mental domain. Second, the Behaviorists themselves upon whom the Structuralists sought to stake their claim to 'scientific' method ignored what current workers in behavior analysis refer to as 'private events' (McIlvane et al., 1996:79). They treated an organism as a black box by falsely assuming that what cannot be observed directly must be abstract and therefore not open to scientific examination. Hard-Science Linguistics does not limit itself to just the one level of analysis (the linkage) but also theorizes about the internal properties of the communicating individual—the latter analogous the 'private events' of behavior analysis. In addition, the above argument lends support to the claims of behavior analysts, who 'tend to agree… that what is learned is contingencies—relations or regularities among environmental events—and not specific stimulus-response connections' (McIlvane et al., 1996:79).

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[1]   Krashen (e.g., 1985, 2003) throughout distinguishes 'acquisition' from 'learning'. He refers to the former as an unconscious process, the latter, as a conscious process. To this extent the distinction corresponds with the well-established distinction between implicit and explicit memory / learning. (For a very readable discussion of implicit vs. explicit memory, see Kolb & Whishaw 1996:366–75). However, Krashen continues to frame the distinction in terms of unconscious knowledge *of language* vs. conscious knowledge *about* **language**. The latter makes a great deal of sense—that explicit learning about speech and writing is couched in terms of the objects of language created by traditional assumptions. However, the former—the notion that our implicit learning is 'of language'—is oxymoronic.

The objects of language are created by (conscious, i.e. explicit) assumption and therefore belong only to explicit memory / learning.

[2]   A very few linguists apply the traditional term 'language' in an untraditional way (e.g. Lamb 1999)—that is, *not* referring to a purported external 'object'—instead referring to something within the speaker-hearer. However, I prefer to avoid the term, as it more commonly calls up the notion of something external to the person, something purportedly received in the input. It simply is not the case that language exists as an object (or set of objects) in the real world. Thus, I refer, instead, to the properties of the communicating individual.

[3]   Note that this does not mean that the sensory input has to be 'the same'. There are other relevant factors, such as our ability to recognize objects from different orientations, and so on. Suppose we see someone pointing at a book and saying, on two different occasions, 'To jest książka'. Because our visual perception is of *three-dimensional objects in space*, we do not need to see the person from exactly the same angle or the book being held in exactly the same way in order for some neural events to be nearly the same both times.

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❧

EXPERIENTIALLY-BASED NARRATION IN AUTISM: A CASE STUDY

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THE ABILITY TO PRODUCE COHERENT DISCOURSE is vital to getting through life. Those with language and communication impairments face a lifetime of difficulty in social settings. One instance of this is autism. People with autism and related disorders face a challenge with the production of extended discourse, particularly in conversation. The precise nature of what that challenge is is yet unknown.

This paper uses linguistic discourse analysis to look at the discourse of a 7-year-old boy with autism. The paper presents a case study and looks at a semi-structured conversation, produced in the context of a clinical study, to consider issues of coherence and cohesion, linguistic patterning in the text, and inferences that can be drawn about cognition on the basis of observed patterns. In particular, the paper suggests that some of the communication difficulties may be compensatory strategies, including markers of information processing of a compensatory kind. Specifically, the paper aims to show that there is more coherence in the conversational discourse of the boy with autism than it first appears, and that the pathology involves missing links and contextual cues to connect discourse. It characterizes compensatory strategies employed by the boy in the conversation and suggests that the patterns observed may be linked to processing difficulties.

1. BACKGROUND. Autism Spectrum Disorder is a neuropsychiatric disorder characterized by problems in socialization, communication and imagination (Happé 1997). There are currently three main explanatory models for the underlying deficit in autism and related disorders on the spectrum (see Frith 2003 for a full review). The first theory posits that people with autism lack a *Theory of Mind (TOM)*, which is the ability to attribute mental states to others to predict and explain their actions (Baron-Cohen et. al. eds. 1993; Brook & Stainton 2000). Another explanation suggests that there are problems in *Executive Function (EF)*, which refers to decision making processes that are necessary to perform goal-directed behaviour (Russell 1998) and that are said to originate in the frontal lobes. The theory of *Weak Central Coherence (WCC)* refers to a cognitive style biased toward local versus global information processing. With WCC there is trouble with maintaining the gist of a conversation and a focus on details at the expense of more holistic processing (Frith 1989; Happé 1996).

Many theorists now assume that the continuum of social communication impairments seen in ASD are driven by not having a Theory of Mind. However, this has not been formally tested, and while TOM may be part of pragmatic impairment in ASD,

it does not explain all the variation in the social communication impairments. Some other mechanisms may be more adequately explanatory.

2. SOCIO-COGNITIVE APPROACH: LINGUISTIC PHASAL ANALYSIS. The theoretical approach is socio-cognitive linguistics (Gregory 1988; Asp 1995, 1997; de Villiers & Stainton in press), a contextually based model in the Systemic-Functional tradition which assumes language is to equal extents a social phenomenon and a cognitive phenomenon. The analysis was carried out on a complete conversation using Phasal Analysis (Gregory 1985; Malcolm 2001; Young 2001), including full analysis of prosodic, grammatical and discourse features.

Based on consistency in selections that were made in the text, linguistic phases were identified. Twenty primary phases were distinguished, a substantial number in a text of this size (350 lines), signalled by major shifts in patterns of experiential meaning, interpersonal meaning and message organization (Halliday 1994). In this text, the number of primary phases reflects numerous shifts in topic: there are many questions and answers but the topics are rarely developed.

At the secondary level, an overarching pattern emerges where the research technician introduces a topic with a question and the child, Will, replies, followed by a question and answer sequence for several turns before Will initiates a question and answer sequence of his own where *he* asks questions and the research technician replies—a kind of question-and-answer reversal pattern. However, the pattern is not totally reversed because Will generally gives the research technician the questions so that he can answer them (as in (1)) or commands her to ask him the question (as in (2)).

(1)   RES: where do you go swimming?
        CHI: um -: at a house.
        RES: mmhm?
        CHI: but whose?

(2)   **CHI: say 'would you watch tv?'**
        RES: would you watch tv?

In general, this *speech function reversal* is on topic. But Will does not necessarily respond to the immediately preceding micro-phase. Sometimes he picks up on a previous topic, but it is always within the super-ordinate phase, as in **Figure 1**.

In addition to the question-answer reversal pattern that extends throughout the discourse, there are several key patterns in the text. These three discourse patterns, *recurring phases, digressions* and *non-sequiturs* are discussed in turn.

3. DISCOURSE PATTERNS

3.1. RECURRING PHASES. There are three primary phases that recur in the text. The first involves a topic at hand, 'trucks and trains'. This seems to be what the conversation is
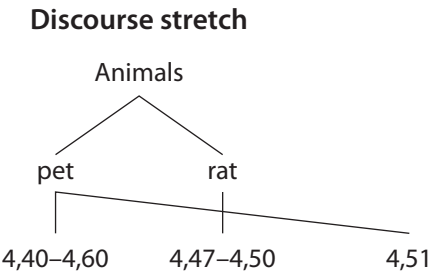
Discourse stretch

Figure 1. *Discourse stretch.*

Discourse Plot
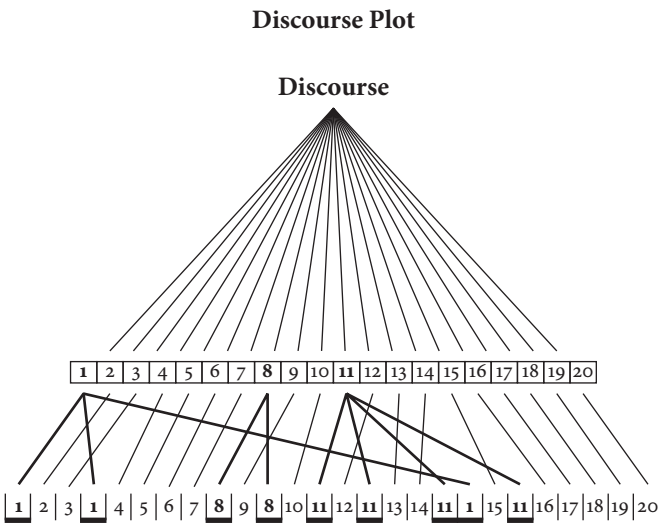
Figure 2. *Renewed topics.*

about for Will. The research technician and Will are also playing with trucks, so the topic is reflected in the immediate situational context.

The other two recurring phases concern issues that come up in the conversation, but that are never fully resolved or concluded. **Figure 2** reflects a secondary phase discourse plot with renewed topics in bold.

While the recurrence of the phases can clearly have a disruptive effect, it is equally apparent that the phases recur because the child's interlocutor does not take up his topic. The following excerpts concerning lions illustrate this pattern. Will is very forthcoming on his opinion of lions:

(3)   CHI: what would scratch you.
       CHI: wouldn't that be terrible?

(3) RES: mmhm.
     CHI: awful!
     CHI: stink.
     CHI: and then you hate lions.
     CHI: stink hairy.

And, in a later phase:

(4) RES: do you like lions?
     CHI: na I hate lions.
     RES: you hate <lions> [>]?
     CHI: <bushy> [<] and hairy stinky.

Later in the text, when Will is asked about his favourite animals, he does not have the answer because (we learn later in the conversation), he does not have a favourite animal, but he takes another opportunity to tell his interlocutor about how much he hates lions:

(5) RES: what's your favourite animal?
     CHI: an I hate lions.
     RES: yeah.
     RES: you <hate> [>] lions.
     CHI: <hate> [<].
     RES: but what what animal do you like?
     CHI: stinky and then I li ugly -:   .

This primary phase on lions has the most interpersonal attitude of any in the text, and so it is significant that the research technician has not shown sufficient appreciation of Will's feelings about lions. It gets renewed. However, in (6) a more pointed question has more success:

(6) RES: what's your favourite animal?
     CHI: an I hate lions.
     RES: yeah.
     RES: you <hate> [>] lions.
     CHI: <hate> [<].
     RES: but what what animal do you like?
     CHI: stinky and then I li ugly.
     RES: how about bunny rabbits?
     RES: do you like bunny rabbits?
     CHI: yes -:.
     RES: do you?
     CHI: why yes!

Two points are of interest with regard to this recurring phase. First, it is interesting that Will has a more predictable response when he is asked the *right* question. In other areas of the text as well, when he has trouble providing the exact answer, it is problematic for the discourse. Will relies heavily on exact question and answer correlates. The other interesting aspect is, when a phase recurs, Will's interlocutor often attempts to keep him focussed on the topic at hand, not realizing his conversational aims. Here, she is responding to the marked case, as Will also has a tendency to digress, a second, though less frequent, discourse pattern.

3.2. DIGRESSIONS. There are several very short imaginative or private digressions, where Will seems to think out loud about a recent memory without relating it to the interlocutor as part of the conversation. In the following example, it seems as though Will is briefly having an imaginative episode. This is quite disruptive because he exits from the reciprocal interaction.

(7) CHI: that's because they are many machines in the construction site.
     RES: there are many which?
     CHI: them there are many machines in the construction site.
     CHI: be careful.
     CHI: there might be danger.
     CHI: okay.
     CHI: uh okay b(ye)bye!
     CHI: that was great.

In (7), Will is elaborating on machines at the construction site, and it looks as though he digresses into a story that would caution children not to go into a construction site. But there is also a clear departure from the two-way conversation, as there is polarity with an imaginative interlocutor who is *not* the investigator ('okay, b(ye) bye'), followed by an evaluation ('that was great') which seems to refer either to what he just experienced internally, or to the story. If 'that' does refer to any mutually accessible referent, the reference is unclear. This episode happens quite early in the conversation, providing a preliminary example of Will's potential to digress, as well as a possible difficulty with the referential system in terms of using unambiguous deixis to make references his interlocutor can access.

3.3. NON-SEQUITURS. The third key pattern is the many seeming *non-sequiturs* throughout the text, places where Will provides an irrelevant or inappropriate response, relative to context. Again, these stretches give an impression of incoherence. However, when an analysis is performed, Will's responses can all be seen to have a connection to the wider topic, in some cases even addressing the question directly. But in most cases, they lack the organizational or contextual cues that make this apparent.

For example, often there is a question Will cannot answer. (He doesn't know the answer, or the question does not take into account some crucial point he has made,

so there isn't a straightforward answer.) In such cases Will gives a related answer. He initiates a new tertiary phase, but it is always within the same secondary phase. In other words, he responds. And he responds to the general field. So what appear at first to be turn-taking violations, are in fact not, they are responses, but they are missing certain cues to indicate this.

(8) RES: <and> [<] you were telling me about a cement truck before.
     CHI: mm -: yes!
     CHI: it had a wet heavy load.
     RES: a wet heavy load -: .
     CHI: of concrete.
     RES: from what?
     CHI: # for the m for for the mighty mixer.

Sometimes Will says something that appears to be from left field, but with even a limited amount of contextual knowledge it is possible to see how it links up with the topic at hand:

(9) RES: how does it get filled up?
     CHI: just go.
     CHI: um I'm in a town called a Batch land.
     RES: at a Batch Land.
     CHI: but sometimes I think I'm in a batch plant.

In (9) Will's response looks tangential. But if one has the relevant contextual information, his response makes more sense. Cement is typically prepared and dispatched in a *batch*. *Load* is an even more common term, this being when it is *in* the truck. A *plant* is where trucks fill up. So a cement factory, where they produce cement and make concrete, is *called* a 'batch plant'. Will is using fairly technical vocabulary here. But without this knowledge, his interlocutor could miss that he is answering the question at all. Certainly it is a bit digressive, or playful (e.g. 'a town called batch land'), but it makes sense too.

Interestingly, in the *batch land* example, Will also switches perspective in response to the question:

(10) RES: how does it get filled up?
      CHI: um *I'm* in a town called a Batch land.

Dealing only in the immediate present, Will goes directly from 'just go' to being there, with the first person pronominal reference. He switches to the first person ('*I'm* in a town called a Batch land') and as a result, he fails to direct his interlocutor's attention to the right referent with deixis. The topic moves away from the immediate, and the referential system breaks down. A presupposition skill is lacking here: the

reference shifts inappropriately relative to context. This is especially striking because Will switches perspective across the adjacency pair. It creates the impression he is not staying with the conversation at all.

4. PROBLEMS IN THE REFERENTIAL SYSTEM. Will's perspective switch is also part of a whole pattern of deixis in the text. There are problems in the referential system. Will shows difficulty with specificity of reference, failing to successfully direct his interlocutor to a topic referent, as in (11).

(11) **CHI: what about the kids?**
      RES: what kids?

He also appears to have some difficulty with point of reference in conversational turns, as in (12).

(12) **CHI: what do I do?**
      CHI: what do you [!] do in the summer?
      RES: what do I do in the summer?
      RES: I go for hikes in the summer.
      CHI: yes.

In some places, contextual cues for temporal order are misapplied. The following example refers to a past event:

(13) CHI: **now** sh now he's stuck in between # on a summer day.

In this next example, Will seems to be using a temporal order link to indicate specificity:

(14) RES: who do you go for picnics with?
      CHI: um Andrea.
      RES: Andrea.
      CHI: And all and all the ki.
      CHI: What about the kids?
      RES: What kids?
      CHI: well uh # they the they they like picnic.
      RES: most kids like picnics.
      RES: mmhm.
      CHI: yes.
      CHI: they did.
      CHI: **now.**

In (14), Will is talking about specific kids and the picnic, but his interlocutor understands the general case (*most kids*), so he uses the temporal marker *now* to make a contrast to the general case.

5. COMPENSATORY TECHNIQUES. There is evidence that Will exploits the interpersonal system to compensate for the problems he has with reference. Will has recurring rhetorical strategies to introduce new topics or redirect attention to a particular field.

In one pattern, already familiar from (2), repeated here as (15), he uses directive commands to get his interlocutor to ask the right questions:

(15)   CHI: say 'would you watch tv?'
       RES: would you watch tv?

In another case he has trouble integrating the answer he would like to provide and so he just supplies a lexical item (*rat*).

(16)   RES: have you ever had a bunny rabbit in your house?
       CHI: why um -: rat.
       CHI: say 'what's the ma rat's name?'
       RES: what's the rat's name?
       CHI: Ace.
       RES: did you have a rat named Ace?
       CHI: yes.

It is as though he doesn't know how to say 'do you know what my rat's name is?'

In fact, Will uses the directive command speech function with the mental verbalization process 'say' for a number of functions. He uses it to get agreement (17), to have his interlocutor say what he would like to hear and to solicit participation (18), and even for speech acts, inciting his interlocutor to say what he would like her to do (and thus to do it) (19).

(17)   CHI: say yes.

(18)   a. CHI: say look out you don't fall.
       b. CHI: are you # say say are are you are you kidding?

(19)   a. CHI: ## say stop.
       b. CHI: say stop the turntable.

In another compensatory strategy, when Will introduces something, he often does it with a question he then answers. It seems he needs a question in order to respond. Typically he employs the rhetorical structure 'what about…' or 'what happens if…':

(20) CHI: What happens if you go on the turntable?

What appears to be missing is he cannot find a natural transition to his topic. *Say what's the rat's name?* is redirecting the research technician to ask for what Will considers to be the more relevant information. He is triggering a question. This is not uncommon in discourse. There are many techniques to trigger questions: 'Oh man what a day'; 'How was your day?'; 'Do you want to know how my day was?'; 'Guess what'; etc. But a main difference here is frequency. In addition, this is a standard strategy Will uses. It compensates for not being able to link the information to the ongoing discourse. It is interesting that it shows some attunedness with the interactional system he has trouble with. But it is also interesting that he exploits the one limited resource he knows how to do for this interactional function to do the textual work.

6. DISCUSSION. Amid all the observable patterns in the discourse, one consistent feature is that overall there is less integration of disparate elements of language and context. Will applies concepts apart from contextual considerations. It is a rigid application, and it is applied repetitively. What we may ask then is, why is this contextual information not being built in?

One thing we can notice is that Will has preferred structures and rigid applications of these structures. For example, he keeps using 'say x' over and over again, but he does not see the whole context. Moreover, organizational and contextual cues that would tie in new discourse and make connections between the elements are missing.

Yet there is a compensation: Will is linking the items through a question and answer sequence, a preferred, formulaic structure. So his way of achieving linked discourse is the question and answer pair—ordered information, with a full realization of the adjacency pair, but with a simplified model. The rigid pattern and the repetition may also point to how he is categorizing since it is apparent that he is using specific examples and thinking about specific examples, but having problems with the abstract concept.

In pondering why contextual information is not being built in, one plausible explanation is that Will is not working with a complex model. There may be deficits in complex cognitive abilities across domains, so that he does not pull together and simultaneously process information from multiple sources. Also, Will's information is not sorted, again suggesting a particular kind of processing limitation where semantic information is not being consolidated.

There is limited referential capacity, but also limited use of interpersonal resources for turn-taking. At the same time the interpersonal system is being used as a compensation for limitations in the referential system. This points to a possible dissociation between interpersonal and referential verbal behaviour in autism—a hypothesis that has been made with regard to aphasia (Nespoulous et.al. 2002).

7. CONCLUSION. To summarize, Will's discourse is less incoherent than it first appears. The linguistic analysis shows that there is internal consistency and coherence when

one looks for it. He has some marked imaginative or private digressions and his inter-locutor sometimes tries to get things back on track at the wrong times, assuming he is not making sense even when he is, responding to the marked case.

There are, however, limitations in the referential system, including deficits in using organizational markers or cues. Will has difficulty offering the kind of cues people need, and does not provide transitions and links between information units, or mis-applies them. There are also problems contextualizing his message. Contextual infor-mation that would be needed in order to be able to interpret the message is missing.

As a compensation, Will employs a single rhetorical strategy and uses a preferred structure to create a connection for the discourse ('say x', or 'what about x'). He makes excessive use of a particular interpersonal resource because of problems with the referential system. One possible explanation may be that he is working with simple models in processing information.

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1   Symbols follow CHAT conventions of the CHILDES language data exchange system:

   RES = research technician
   CHI = child
   [>] = overlaps with following text
   [<] = overlaps with preceding text
   [!] = marked stress
   # = pause
   ## = long pause
   -: = syllable lengthened

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FROM ART TO WRITING: THE MEGALITHIC IMPETUS FOR OGAM SCRIPT

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IN RECENT ISSUES OF *The LACUS Forum* (Griffen 2002, 2003a), the date for the origin of the ogam signary has significantly been moved back. First, the development of ogam was seen to have taken place long before the script was displayed on stone monuments (these probably in imitation of Roman grave markers). Next, it was seen to have preceded regular trade contact between Celts and Greeks in western Europe. Now, an examination of even more ancient archaeological evidence places the impetus for ogam so far back that it can only be seen as an independent development, quite possibly predating the introduction of Indo-European itself.

1. THE AGE OF OGAM. First of all, *P was reconstructed as the antecedent of H in the ogam signary, as shown in **Figure 1** (overleaf). This reconstruction was based upon the phonetic structure of the signary's array and comparative evidence among Irish ogam, Pictish ogam, and Latin (Griffen 2002).

In the structure of the array, the vowel column begins with the logical entry point into the vocalic triangle within the oral cavity—A. From this point, we can proceed into the cavity in logical stages first in the back—from O to U—and then in the front—from E to I. This symmetric, articulatorily-based progression is matched in the first and third (consonantal) columns by labial consonants—B and M—that also represent the most logical entry point into the oral cavity for consonants. Moreover, the B introduces the 'soft' column with the lenis labial, and the M introduces the 'complex' column with the complex, nasal labial. Within this framework, H is totally anomalous, for it contradicts the pattern established in the other columns by introducing the 'hard' column from an inconsistent position and manner. *P, on the other hand, fits the pattern precisely both in 'order' and in 'series'.

Comparative evidence corroborates the *P in this position. Indo-European */p/ changed in Celtic through /χ/ to null. Thus, the Latin root *nepot-* 'nephew, grandson' corresponds in Pictish ogam to NEHT- with the intermediate fricative and in Irish ogam to NET- with the null realization. This firmly establishes the historical roots of H in *P, and it demands that the *P be in the original array of the ogam signary.

Then, evidence from the Celtic or Celtic-influenced dialects of Lepontic and Ligurian in the Alpine region between Gaul and Italy drew the date of origin even further back (Griffen 2003a). After the initial shift from /p/ to /χ/ or null, many Celtic dialects experienced a further shift of /kʷ/ to a new /p/. Of course, the first shift would have to have been completed before the second would have even been possible. Inasmuch as Lepontic and Ligurian maintain the /p/ created by the second shift in the seventh

		/n/			Q	/kʷ/			R	/r/			I	/i/
	N	/n/		Q		/kʷ/		R		/r/		I		/i/
	S	/s/		C		/k/		Z		/tˢ/		E		/e/
	F	/w/		T		/t/		GG		/gʷ/		U		/u/
	L	/l/		D		/d/		G		/g/		O		/o/
	B	/b/		H<*P		/χ/</p/		M		/m/		A		/a/

Figure 1. *The ogam signary.*

century, the initial shift must already have been completed for a considerable length of time. This, along with other evidence involving the Greek number system, moved the date for the establishment of the ogam signary with its original *P to some point well before the seventh century BCE, quite possibly back into the second millennium.

2. THE IMPETUS FOR OGAM. Such an early date for ogam would not necessarily preclude influences from external writing systems. After all, writing dates back to the fifth millennium BCE in the Vinča culture of southeastern Europe and to the fourth in Sumer. Nonetheless, these findings have shown that ogam was not simply some cipher based upon Latin or Greek (as claimed, for example, by Macalister 1937), nor was it based upon the Classical model at all.

The findings do, however, introduce two new questions: (1) What was the impetus for this tally-based alphabetic system of writing; and (2) where did the system originate?

The key to answering these questions necessarily lies in a time before the inception of the system itself, and this draws us inexorably back into the megalithic. Since we have no writing from the megalithic period in western Europe, we shall have to examine the logical source for graphic representations—the art. Let us therefore turn to the definitive compendium on the subject, Elizabeth Shee Twohig's *The Megalithic Art of Western Europe* (1981).

In her analysis of megalithic art from the Iberian Peninsula, Brittany, and the British Isles, which perhaps we ought to designate now as the Isles (compare Davies 1999: xxii), Twohig identifies a number of design types, or motifs, that could have evolved into some sort of writing system. Of course, since the ogam signary was quite transparently developed from a tally system, the graphic representations we are interested in are specifically those that could have provided an appropriate basis for the counting of such tally marks.

In **Figure 2**, we find Twohig's 'principal motifs in Iberian megalithic art' (1981:23). Of these, several would appear to be amenable to the type of counting of tally marks that could have evolved into ogam script. For example, the triangles and V's of motif 3 do provide the basis for number and column differentiation that could have provided the impetus for ogam, and the same could be said of motifs 4 through 6. As for motifs 7 through 9, these appear to be sun and moon symbols that are found frequently throughout the world. As the first radial-line motif (motif 7) is in fact found in the Cretan Linear A and B counting systems (see Ifrah 2000: 179), it could conceivably be

1. Human figure	2. Human skeuomorph	3. Rows of triangles or V's	5. Saw-tooth motif	6. Vertical serpentiforms
6. Horizontal serpentiforms	7. Radial-line motifs	8. Circles	9. U motifs	10. 'The Thing'
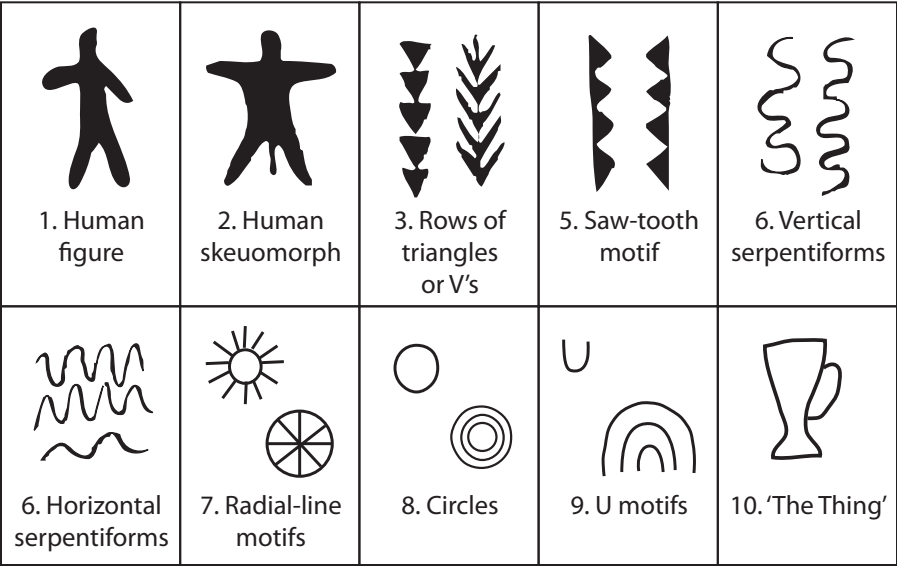
Figure 2. *Motifs from the Iberian Peninsula (after Twohig 1981:23).*

1. Cupmark	2. U motif	3. Yoke	4. Crook	5. Cross	6. Angle 7
7. Axe-triangular blade	8. Hafted axe	9. Mané Rutual type axe	10. Buckler	11. Wavy lines	
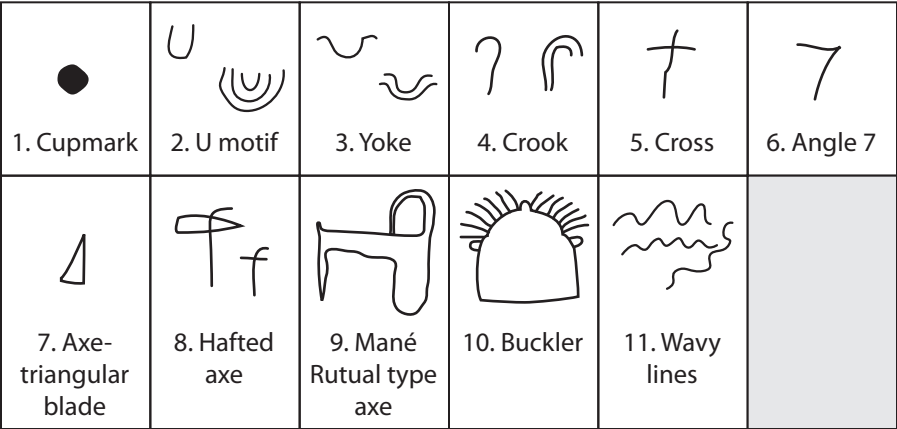
Figure 3. *Motifs from Brittany (after Twohig 1981:54).*

a source for the process of tallying that resulted in the development of ogam. However, these designs are not very well developed in this region.

Turning our attention to **Figure 3**, Twohig's 'principal motifs of passage grave and related art in Brittany' (1981:54), we find fewer motifs that could provide the tally base for ogam. The cross of motif 5 appears to be a dead-end, and motifs 3 and 4 are also rather limited. Once again, we find countable wavy lines in motif 11, although the arrangement would make them appear more like representations of water than tally
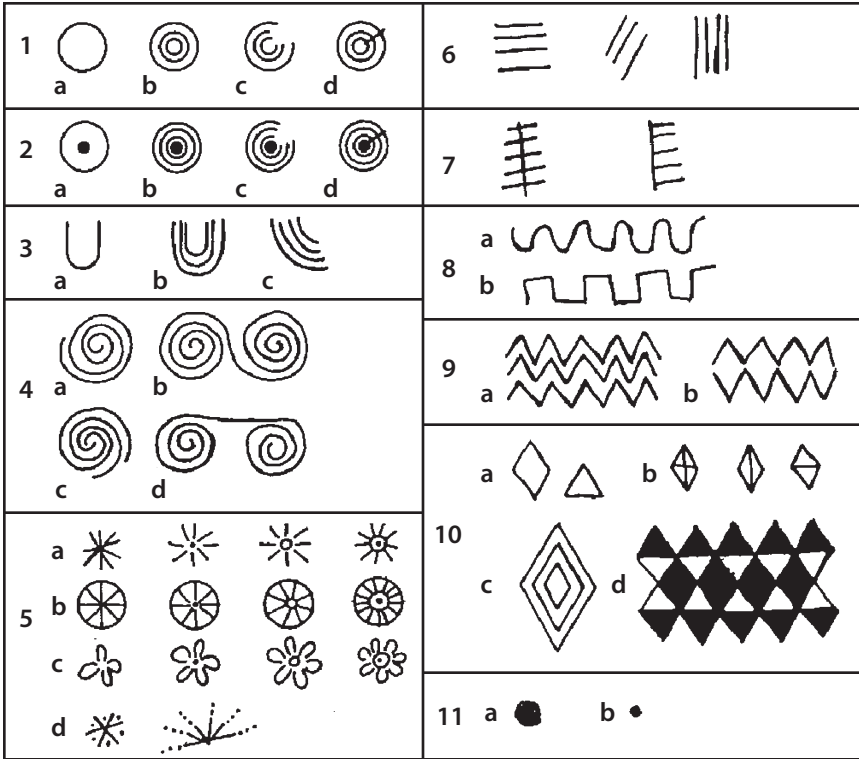
Figure 4. *Motifs from Ireland and Britain* **(after Twohig 1981:107):**

1. **Circle:** *(a) single, (b) concentric, (c) pennannular, (d) with radial line*
2. **Circle with central dot:** *(a) single, (b) concentric; (c) pennannular (d) with radial line*
3. **U motif:** *(a) single, (b) boxed, (c) arcs*
4. **Spiral:** *(a) single (clockwise), (b) double, (c) running, (d) 'spectacle' or 's'*
5. **Radial:** *(a) with lines, (b) lines and outer circle, (c) with 'petals', (d) with dots between or at ends of line*
6. **Parallel lines**
7. **Offset motif**
8. **Serpentiform:** *(a) typical, (b) squared*
9. **Zigzag:** *(a) parallel, (b) apex to apex*
10. **Lozenge/triangle:** *(a) plain, (b) divided lozenges and triangles*
11. **Cupmark** *(a),* **dot** *(b)*

markings. Finally, while the lines on motif 10 could hold some promise, the complicated nature of the buckler base rather limits this design as well.

The motifs from Ireland and Britain in **Figure 4** (Twohig 1981:107), on the other hand, abound in countable lines. Certainly, the solar and lunar motifs 1 through 5 show more variation than do those from the Iberian Peninsula and Brittany. Most
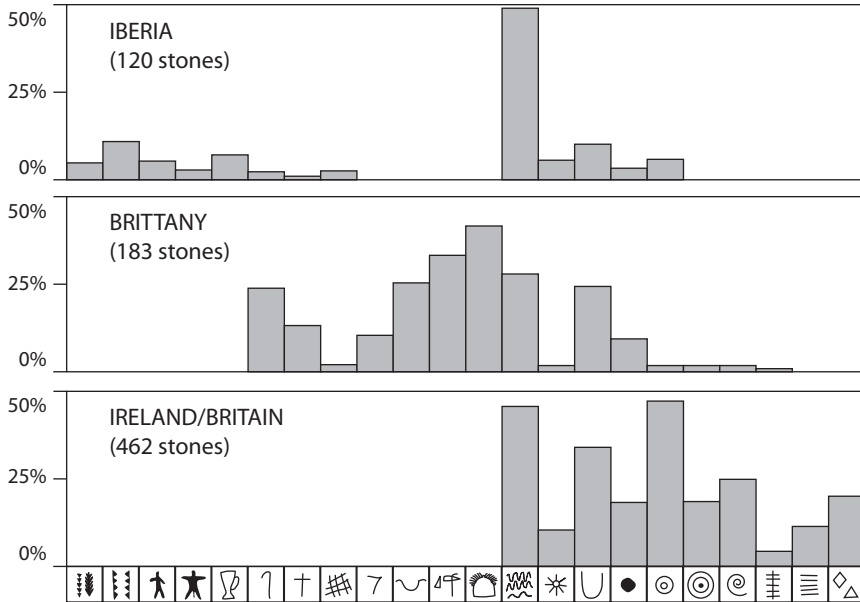
Figure 5. *Distribution of motifs (after Twohig 1981:137).*

importantly, though, motifs 6 through 10 provide very promising bases for the simple tallying of lines that could have developed into ogam. Indeed, motif 6 and especially motif 7 already bear a striking resemblance to the system that would later define the ogam script.

Thus it would appear that the motifs from the Isles could have provided the impetus for ogam. Moreover, those from the Iberian Peninsula could also have provided some, more limited basis, and an Iberian origin cannot be ruled out entirely at this point.

The choice among these groups becomes obvious, however, when we compare Twohig's distribution of the motifs, as in **Figure 5** (based on Twohig 1981:137). As we look across the bottom of this bar graph at the various motifs, we notice that the figures with lines most accommodating to some form of tally notation are those on the right. Here the appropriate motifs from the Isles clearly show predominance. Moreover, the megalithic artists from Ireland and Britain actually appear to have avoided motifs that were not adaptable to tally marking.

What this means is that in their use of design motifs, the passage-grave and megalith builders from the Isles were quite obviously predisposed to working with designs that would support the type of line tallying that would later develop into the ogam system of writing. Indeed, the parallel lines and, to an even greater degree, the offsets transparently prefigure the ogam signary.

This is certainly not to say that ogam was invented by the megalith builders of the Isles. Rather, these people most likely developed the design motifs that would first evolve into an appropriate tally system and then, through this tally system, supply

the impetus for the subsequent development of the pattern of graphic representation found in ogam. Nonetheless, this does rather firmly indicate that the place of origin for the ogam script was in all probability the Isles. Moreover, the connection between the megalithic peoples of the Isles and the ogam writing system does provide us with a starting date for the development of the signary.

3. IMPLICATIONS FOR WRITING IN WESTERN EUROPE. At this point, we find ourselves in a major dilemma with regard to the dating of the ogam signary. Given the evidence of Lepontic and Ligurian, the signary had to have been in place well before the seventh century BCE for the H to have replaced the *P. Given the archaeological evidence of megalithic design motifs, the system would have begun in the Isles. But the Isles were the last area to be exposed to the Celtic culture, by as late as the sixth century BCE (see, for example, Cunliffe 1997:146).

Clearly, those originally using the ogam script could not have been Celts, at least as we envision them today (but see James 1999). What we are faced with, then, is a set of artistic motifs among the pre-Celtic population of the Isles that developed into a numeral system and then into a writing system that was only later adopted as such by the Indo-European Celts. Thus, the ogam alphabetic writing system must have developed independently of the Greek alphabet with its eighth-century inception (Sampson 1985:99). Moreover, its organization along the lines of a tally system is quite incompatible with the Sumero-Phoenician tradition.

As mentioned above, this alone does not entirely rule out even more ancient influences. After all, it has been demonstrated that the Vinča script of the fifth millennium BCE was indeed writing (Griffen 2003b), and many of the signs in this script also depend upon the number of lines per sign—to include parallel lines and offsets (see Winn 1981). Such practices could have provided some contributory impetus for the development of ogam; or perhaps they may have had some reinforcing influence. As Paliga (1989) demonstrates, there was a cultural continuum between the 'mega' inhabitants of northwestern Europe and the 'urbian' inhabitants of southeastern Europe.

Unless Indo-European had been introduced far earlier than is generally accepted by linguists, though (for example, Beekes 1995—but see Renfrew 1987, Gimbutas 1997), these influences were pre-Indo-European. In any case, they could not have been derived from the Sumerian invention of writing, which followed the Vinčan by as much as a millennium and a half and which adhered to totally different graphic principles. As such, this Insular invention of an alphabet has profound implications for the history of writing, for Indo-European linguistics, and indeed for linguistics in general.

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THE PROBLEMATIC INTERFACE BETWEEN WRITING AND SPEECH

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IT COULD EASILY BE ARGUED that the most important event in the history of modern linguistics was the decision, around the turn of the twentieth century, to define the spoken form of language as its primary object of study, relegating written language to the periphery of the field. This decision, made possible by the acceptance of reliable forms of phonetic transcription, all at once made the 'language' studied by linguists the systematic phenomenon to which scientific methods of investigation could fruitfully be applied, rather than the messier and more inconsistent phenomenon revealed in written texts. It is often forgotten that this shift had been preceded by a similar change in emphasis that had begun half a century earlier in the field of language pedagogy. The proponents of the 'Natural Method' around 1850 had decided to mimic the process of first language acquisition, and by the turn of the twentieth century, the similar but theoretically more sophisticated 'Direct Method' had become widely accepted, at least in France and Germany (Passy 1899). In both approaches, language was taught first and primarily in its spoken form, with writing being introduced only once the spoken form had been mastered.

Though linguistics had pushed the study of writing to its periphery, it would be a mistake to think that the study of written language was neglected from that point on. The field of philology, out of which linguistics had emerged, continued to be practiced and has been up to the present day. The work of the philologist in the reading, transcription, and editing of early written documents is fundamental to the fields of ancient and medieval history and literature, and this work will continue as long as these subjects are studied. Philologists continue to ponder the scripts and orthographies used in early writings and to study the production and functioning of documents in the societies that produced them. However, philology remains more a practical than a theoretical discipline and has receded greatly from the preeminence it had in European universities during the nineteenth century.

Since the middle of the twentieth century, a few linguists have returned to the study of writing systems, particularly the study of scripts. I. J. Gelb in his book *The study of writing* (1952) attempted to remedy the neglect of writing by linguists by introducing a new field which he called *grammatology*, dedicated to the study of the origin, development, and classification of writing systems. This new field progressed with notable accomplishments by Cohen (1958), Fevrier (1959), and Harris (1986), in a debate over the origin of writing. It culminated in a number of major compendia of writing systems, notably those of Coulmas (1989), Haarmann (1990), and Daniels

and Bright (1996). It is notable that the focus of all these studies is specifically the enumeration and classification of script systems.

By a remarkable coincidence, in 1967, fifteen years after Gelb, Jacques Derrida, after criticizing Ferdinand de Saussure for preaching the deliberate neglect of the study of writing, introduced a new field of study which he also called grammatology (Derrida 1974). Originally intended as a theoretical approach toward the understanding of writers, readers, and the texts that link them, it quickly developed into the new 'post-structuralist' school of literary criticism. Under this aegis and equipped with an elaborate system of jargon, the new approach trained a hypercritical eye on the authority, presuppositions and intentions of the writer, promising completely new analyses of literary works that scholars up to then thought they had understood. If one can get beyond the oft-impenetrable jargon and relentless critique, however, post-structuralism amounted to a type of pragmatics of written texts, and the new approach to the study of writing flourished from then until the last decade. The form of post-structuralism that spread to the social sciences has had even more lasting effects, since it led to the criticism of the scientific basis of the disciplines of sociology and cultural anthropology. However, even aside from this or any other particular approach, the case could be made that literary criticism in any form must of necessity be a field devoted to the structure and function of written texts.

Amazingly, the two grammatologies proceeded into the late twentieth century oblivious to one another, each developing a separate side of the study of writing. In 1982, something approaching a synthetic view appeared in a new approach, introduced by Roger Wright in his landmark work, *Late Latin and Early Romance in Spain and Carolingian France*. Wright coined the term *sociophilology* in 1996 and described it as 'an approach to the linguistic study of texts from the past which attempts to combine traditional philological analysis with the insights of modern sociolinguistics' (Wright 2003:vii). In my view, the greatest departure of the new approach was that it put the focus of sociolinguistics on the written form of language, as opposed to the spoken form that had occupied it almost exclusively before this. At the same time, it promised to bring philology back into linguistics, through the back door of one of its hyphenated subfields. Either accomplishment would have been a significant break from past practice.

In light of its novelty and cross-disciplinary scope, the work of Roger Wright merits careful study by linguists interested in the phenomenon of writing, since his work may have serious implications for the understanding of certain phenomena studied by linguists. The major thesis of *Late Latin and Early Romance* is that, although Classical Latin had been the literary language of ancient Rome, Medieval Latin was an invention of the Carolingian Renaissance. According to Wright, the new Latin came into existence suddenly sometime during the reign of Charlemagne, i.e. in the years following his coronation in the year 800. Before Wright proposed this view, the one widely held among philologists was that Latin existed continuously from ancient times into the Middle Ages as the spoken and written language of the educated classes, along with the many vernaculars descended from it. Marshalling a large amount of

textual evidence, Wright points out that this could not have been the case. The few surviving documents written in the period from 450 to 800 tend to be written in an increasingly anomalous form of Latin which, upon close examination, reveals itself to be an increasingly unsuccessful attempt to write the vernacular language using the Latin literary language.

Though his idea met with much resistance from philologists, historical linguists tended to find it quite natural that, as Romance sound changes accumulated, users of Latin writing would simply change the way they pronounced Latin words, rather than changing spellings that had been relatively stable since the first century BC. For example, he adduces such evidence as poems that only rhyme if you pronounce the Latin with Spanish phonology. Furthermore, when medieval scribes came to write Latin, they would naturally take advantage of Latin's word order flexibility to order their words in approximation of the syntax of their Romance vernacular. He argues that what philologists had long attributed to literary incompetence during this period, turns out to be a rather clever method for coping with a writing system that less and less reflected actual pronunciation.

Wright's scenario for the invention of Medieval Latin proceeds as follows: when Charlemagne had gathered together religious clerics from all over his new empire, he would have discovered an enormous variation in the ways Latin was pronounced and written, something which was a great obstacle to a unified Christian liturgy. It was discovered that the eminent Latin scholars of England had a way of pronouncing Latin which involved pronouncing all the letters (and certain letter combinations) with consistent sound values. History records that he invited Alcuin of York to design for him a new educational system for the clergy incorporating the English way of pronouncing Latin and a more disciplined approach to syntax. Though there was some later backsliding into a more vernacular pronunciation of Latin, it was this new synthetic form that soon became Medieval Latin. In the centuries after that, new orthographies were, one by one, designed for French, Occitan, Spanish and Italian, thereby defining them as separate written languages, and, by extension, separate languages in every sense.

One might carry Wright's line of reasoning a bit further to the conclusion that it was actually the English who had invented Medieval Latin, and that its appearance in the Carolingian Empire was merely a case of cultural diffusion. Why would it have been the English who invented it and not the French or Spanish or Italians? England had the distinction of being the one part of the former Roman Empire where spoken Latin was quickly lost, thanks to the early loss of the Roman legions and a heavy population influx of Germanic-speaking peoples. Learning Latin as a foreign language and having no spoken form to go by, the English devised a way of pronouncing it letter-by-letter, as if it were written phonetically. They were assisted in this by a document containing articulatory descriptions of the sounds associated with Latin letters, originally extracted from the works of Martianus Capella, a Carthaginian writer of the fifth century AD, but circulating throughout England, most often with erroneous attribution to other authors:

Namque **A** sub hiatu oris congruo solo spiritu memoramus.
        B labris per spiritus impetum reclusis edicimus.
        C molaribus super linguae extrema appulsis exprimitur.
        D appulsu linguae circa superiores dentes innascitur.
        E spiritus facit lingua paululum pressiore.
        F dentes labrum inferius deprimentes.
        G spiritus cum palato.
        H contractis paululum faucibus ventus exhalat.
        I spiritus prope dentibus pressis.
        K faucibus palatoque formatur.
        L lingua palatoque dulcescit.
        M labris imprimitur.
        N lingua dentibus appulsa collidit.
        O rotundi oris spiritu comparatur.
        P labris spiritus erumpit.
        Q appulsu palati ore restricto.
        R spiritum lingua crispante corraditur.
        S sibilum facit dentibus verberatis.
        T appulsu linguae dentibusque impulsis excutitur.
        V ore constricto labrisque prominulis exhibetur.
        X quicquid C atque S formavit exsibilat.
        Y appressis labris spirituque procedit.
        Z vero idcirco Appius Claudius detestatur, quod dentes
           ortui, dum exprimitur, imitatur.

                                        (Wright 1982:100–01)

The result of their efforts was an artificial Latin phonology which probably had no correspondence with any pronunciation of ancient Rome except, possibly, being somewhat similar to that at the time of the invention of Latin script many centuries BC.

According to Wright, it was only upon the adoption of this new English phonetic Latin that the French, and later the Spanish and Italians, began to consider Latin as entirely separate from their spoken Romance vernaculars. It would only have been at this point that the classic diglossia, which most scholars conceive of as characteristic of medieval Europe, began. Before that point, there was no diglossia, merely scribes struggling to cope with a writing system that was becoming increasingly archaic. Once that writing system was detached from the vernacular and defined as representing a separate language, this separate language could now function as the higher member in a diglossic language relationship.

It would be appropriate at this point to see if Wright's analysis of the Latin situation has any implications for our understanding of the phenomenon of diglossia. As is well known, the term was coined by Charles Ferguson in his classic 1959 article to describe a situation where 'two or more varieties of the same language are used by some speakers under different conditions' (Ferguson 1959:325). An Arabic scholar, Ferguson had

noticed how Classical Arabic coexisted with a number of modern vernacular forms considered to be descended from it, surviving as a special language for all prestigious and formal functions, particularly religion, education, and the law. An important part of diglossia for Ferguson was that 'the actual learning of H (i.e. the "higher" language) is chiefly accomplished by the means of formal education… in terms of "rules" and norms to be imitated' (Ferguson 1959:332). The lower language, in contrast, is the native language of the community and is not formally taught. He then illustrated and generalized the concept by extending it to three other examples which he considered to represent diglossia, viz. Katharevusa and Dhimotiki in Greece, French and Creole in Haiti, and Standard German and Swiss German in Switzerland.

It was an essential element in Ferguson's diglossia that the higher and lower languages be 'varieties of the same language'. Strictly speaking, diglossia is not bilingualism. This part of the definition was somewhat problematic, because even in the examples he chose it could be argued that the two varieties are, in a couple of cases, different enough to be considered separate languages. The general sociological concept, however, proved to be such a useful one that Fishman, in 1967, proposed that this restriction on the definition be dropped, since in many cases unrelated languages can coexist in a very similar relationship. He termed the new relationship extended diglossia, as opposed to the classical diglossia of Ferguson. In 1991, Ferguson defended his original definition, claiming that many elements of the diglossia he described, such as the blending of the varieties in certain intermediate functions, were just not possible with unrelated languages. Still, today the term is most often used in the extended sense introduced by Fishman.

The situation of Latin described and analyzed by Wright is, of course, one of classical diglossia, since the Latin case resembles most closely that of Arabic. Where Wright goes well beyond Ferguson, however, is in his research into the mechanism by which this form of diglossia comes into being, something only possible with the aid of philological methods, since it relies heavily on a careful analysis of written documents. If one returns to Ferguson's original article armed with the insights gained by Wright, several elements of the higher language of classical diglossia acquire special significance.

First of all, the higher language is no one's native language. In linguistics, when a language no longer has any native speakers, it is classified as extinct, though from that point onward it can be learned as a second language, much like people learn Cornish today. Of course, we might say that Latin lives on in all its daughter languages, but these have now defined themselves as separate languages. Because it is extinct, the higher language must be learned in school by rules and norms to be imitated, since it characteristically is never used by adults when speaking to children.

Secondly, the higher language is not typically used for conversation, though some educated persons can occasionally use it that way if necessary. If one looks at Ferguson's list of functions of the higher language—sermons, letters, speeches, lectures, news reports, editorials, poetry—one finds only speech acts consisting of the reading of a prepared text, not conversation. Spontaneous conversation in the higher language

is not a normal occurrence. This is perhaps the most shocking revelation. The higher language is not only extinct, but practically no one speaks it either. If such is the case, can we be justified in calling it a language at all? If not, is there any justification for the *di-* in *diglossia*?

It was Dante who first realized this problem in 1303 when he defined Latin as an artificial language, as opposed to Italian which is a natural language. He argued that all natural languages vary in time and space and Latin does not, so it must be artificial (Botterill 1999:23). Dante knew someone had invented Latin, he just did not know who it was. Wright seems to have shown that it was the Carolingians, or possibly the English, though a strong case could be made that the literary form of Latin had displayed elements of artificiality even in ancient times. Could it be that the higher language in cases of classical diglossia is typically an artificial language? Could it be that classical diglossia consists of an artificial language in a structured relationship with a natural language?

This way of looking at the situation might be worth considering. Classical Arabic shares many of the artificial characteristics of Latin. It is learned in school according to rules and following the example of the Koran, the only text in Arabic pronounced phonetically, and, for that reason, always written with both consonant and vowel characters. This literary language, based on a poetic koiné which preceded it, was codified by Arabic grammarians in the centuries following Mohammed and has persisted as an unchanging literary medium ever since. Not until the twentieth century were orthographies for the regional varieties of Arabic developed, and their functions remain limited. A remarkably similar course was followed with regard to Sanskrit in India beginning in the fifth century BC.

The element of artificiality shows up in most of Ferguson's other paradigmatic examples of classical diglossia. Katharevusa was created as a simulacrum of Ancient Greek, and its fortunes waxed and waned along with the conservative politics with which it was associated. Standard German is a good example of a standard language defined in terms of its written form and is an amalgam of features found together in no single dialect, and is in that sense artificial. The French of Haiti may be a possible exception, though today we usually define it as being in a post-creole continuum, rather than diglossia.

In the last analysis, we may have to recognize that classical diglossia is not a structured relationship between two languages, but a relationship between a writing system and a language, where the writing system represents an archaic form of the spoken language. In such cases, one reads and writes an artificial language and speaks a natural one, though there may be a noticeable similarity between the two. Any function connected with literacy must necessarily be handled in the higher language, and rely heavily on prepared written texts. For example, in the courts of medieval Italy, lawyers asked questions in Latin, and defendants answered in Italian, simply because the lawyers could write down their questions in advance. Any function requiring spontaneous speech had, nearly always, to be handled in the vernacular.

It seems ironic to conclude that there is only one real language in classical diglossia, but it does bring to awareness the very strong role a writing system can play in a society. Though the written form of the language may never be spoken as such, the literate stratum of its society can continually draw upon it for refined lexicon and the occasional syntactic class marker. With this in mind, it becomes increasingly hard to imagine how linguists could hope to understand the spoken language of such a literate society without having a thorough understanding of the nature of writing and the role it plays. Linguistics may want to consider itself the study of spoken language, but it may often simply not be possible in some cases to study the spoken language in isolation from its literary congener.

We might wonder, though, whether the same holds for any highly literate society with a long-established literary language. Such languages often represent an archaic form of the spoken language and the difference between their situation and that of the higher language in classical diglossia may be merely a matter of degree. It is disturbing to consider that our lack of a fully developed science of written language may be seriously impairing our understanding of such languages as French or English, whose writing systems have for centuries displayed a lack of variability over time that makes them more similar to Medieval Latin and Classical Arabic than we would like to think.

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EVALUATING THE DISCOURSE OF WAR: EXAMINING THE SYSTEM OF ATTITUDE IN THE PRINT MEDIA

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THE LANGUAGE OF NEWS REPORTING has always been easy to twist and spin, and nowhere has this been more evident than during a time of war. In fact, survivors of World War II and the subsequent Stalinist oppression of half of Europe know this fact much too well (Makkai, personal communication). Remarkably, that the print media is evaluative in its reporting is a notion that many in the West apply specifically to Eastern block countries. However, the discourse of war is always about the language of war, and in this respect, it makes very little difference if the topic is World War II, Stalin, Bosnia or Kosovo. Nor does it matter whether the paper is German, Russian, Serbian or American. What matters is that in a discourse of war, writers use langague to represent the world from a specific ideological perspective; one that requires clear villains, victims, and heroes.

News in the press is laden with evaluative language; language that allows the writer to express a position on a topic both objectively and subjectively. Often, the choice of language is strategic, with an end result in mind: it is not only to present the news, but to do so in a specific way. This paper is concerned with the discourse of war from the perspective of Appraisal theory, specifically the system of Attitude (hereafter AT). AT is based on the work of Australian functionalists Peter White (1994, 1998, 2004) and James Martin (2000). (See also Ideema et al. 1994). AT examines how writers use language to evaluate a text, a situation, a thing, an event, or a person. The analysis shows that the language of the press influences not only how the news is internalized by a reader but also the opinions that a reader forms. The paper first offers a brief description of AT with a focus on the system of Attitude and then applies the system of Attitude to the April 2, 1999 *New York Times* account of the emptying of Priština by Serb military and militia. Second, it demonstrates that writers can and do exploit language to construct particular views of the world by heightening a reader's awareness of one situation or position, while at the same time suppressing other possible interpretations.

1. APPRAISAL THEORY AND THE SYSTEM OF ATTITUDE. The system of Attitude examines how writers express emotional points of view, pass judgment on people and/or on the aesthetic quality of a process, phenomenon, or text (White 2004). Attitude is divided into three subsystems: Affect, Judgment and Appreciation. Each is concerned with how writers attach an intersubjective value or assessment to participants or processes (White 1998, Ideema 2004).

Affect {
  Authorial: *un/happiness, in/security, dis/satisfaction,* etc.
  Non-Authorial: *un/happiness, in/security, dis/satisfaction,* etc.
}
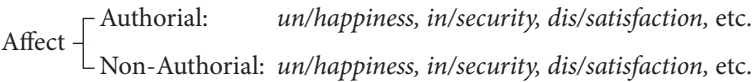
Figure 1. *Attitude: Affect.*

Judgment {
  social sanction {
    explicit
    implicit { provoked, evoked }
  }
  social esteem {
    explicit
    implicit { provoked, evoked }
  }
}
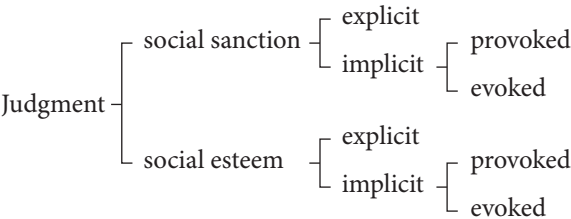
Figure 2. *Attitude: Judgment.*

1.1. ATTITUDE: AFFECT. Affect is the semantic resource for construing emotion (Martin 2000). In the system of Attitude, the subsystem Affect is by far one of the most obvious ways that a speaker or a writer can adopt a position towards some phenomenon. Since Affect is concerned with emotional response and disposition, it is typically realized through mental processes of reaction or attributive relational affect (White 1994, 1998). Affect has a positive and negative dimension. The three main types of Affect are happiness/unhappiness, insecurity/security, and satisfaction/dissatisfaction (Eggins & Slade 1997; White 1998). The system of Attitude: Affect is mapped in **Figure 1**.

1.2. ATTITUDE: JUDGMENT. Judgment examines how writers evaluate human behavior on the basis of predetermined cultural and ideological norms. Judgment is divided into two major rubrics based on culturally specific preconceived social norms: social esteem and social sanction. Social esteem assesses behavior as normal or abnormal, capable or incapable, and dependable or undependable, while social sanction assesses behavior as moral or immoral, legal or illegal (Eggins & Slade 1997; White 1998). Judgment may be inscribed, provoked, or evoked. Inscribed Judgment is presented explicitly, while Provoked Judgement and Evoked Judgment are implicit. The differences between Provoked Judgment and Evoked Judgment are essentially one of degree. Although both are implicit in nature, Provoked Judgment includes some evaluative language. Conversely, in Evoked Judgment a proposition is presented as a factual description which nonetheless has the power to lead to some inference of praiseworthy or blameworthy behavior (White 1998). The system of Attitude: Judgment is set out in **Figure 2**.

1.3. ATTITUDE: APPRECIATION. Appreciation is the subsystem where evaluations are made of products and processes such as plans and policies; it may also evaluate people. Appreciation is grouped into the following categories: reaction describes the emotional impact of the lexicogrammatical target under evaluation; composition evaluates the aesthetic value of the product or process, and valuation, which evaluates

$$
\text{Appreciation}
\begin{cases}
\text{valuation:} & \textit{depressing scene, boring book,} \text{ etc.} \\
\text{composition:} & \textit{balanced, inharmonious,} \text{ etc.} \\
\text{reaction:} & \textit{beautiful, horrible,} \text{ etc.}
\end{cases}
$$
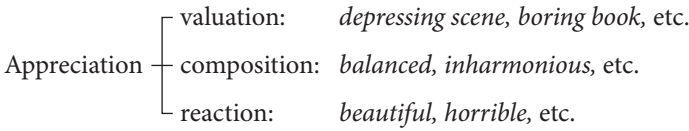
Figure 3. *Attitude: Appreciation.*

the product or process according to such conventions as whether it is important, newsworthy or significant (White 1998, 2004). Appreciation is mapped in **Figure 3**.

The analysis of the text is based on the systems given in Figures 1-3.

2. THE TEXT.

Refugees Tell of Methodical Emptying of Priština

by John Kifner, April 2, 1999, New York Times, sec. A1 & A9

KUKES, Albania, April 1 —

In a chilling display of force, Serb gunmen are systematically emptying Kosovo's capital city, Priština, marching its ethnic Albanians out through gantlets of masked, heavily armed Serbs, refugees crossing the border today said. (2)

More than 10,000 Kosovars arrived here today, stretching at times more than a dozen miles back into Serbia in a heart-rending line of farm tractors, frail old people being pushed in wheelbarrows and weeping village women on foot clutching their children and sometimes a blanket or plastic bag with a few clothes. (3) An elderly man died of exhaustion crossing the border this morning. (4)

They were people of Priština, once an urban center with a university, coffee houses, cinemas and newspapers. (5) And they told in almost identical accounts—as other refugees have in previous days—of the latest Serbian tactics. (6)

This is what they said. (7)

In homes throughout the ethnic Albanian neighborhoods that comprised most of the city there was a knock on the door yesterday afternoon. (8) Sometimes it was only one gunman—from the special police or paramilitary—with a black ski mask over his face. (9) Leave now, they were told. (10) Many were quickly and roughly thrown out of their houses. (11) They were robbed of their money in the process. (12)

Once in the street, they joined their neighbors in a forced match between lines of masked, uniformed Serbs draped in weaponry. (13) At one point the Serbs videotaped the march. (14) Two days ago, Serbian state television broadcast just such a forced march in Priština. (15)

They were split into groups, one taken to the city's railroad station, the other to a soccer stadium. (16)

At Albanian Border, Fleeing Kosovars Tell of the Emptying of Priština (Headline on p A9) (17)

It was difficult to estimate from the refugees' accounts exactly how many people were involved, but they clearly numbered tens of thousands. (18) One trainload was sent to

the Macedonian border. (19) At least three babies were born last night in the railroad station. (20)

During the night, the refugees said, the Serbs brought in fleets of buses and large trucks, including freezer trucks of the kind used to transport sides of beef. (21) Many refugees spent hours packed into the buses and trucks until they were driven out past burning villages early in the morning and dumped out at the last village, Szhur, to walk the final few miles to the border. (22)

"You cannot imagine what happened," wailed Suzana Krsnigi, collapsing in tears a few steps over the border with her elderly parents. (23)

"I was watching television, Sky News, and I walked out into the garden and there were three people with black masks and big guns," she said. (24) "They wanted to kill my mommy," she said. (25) "They said you give me money or I will kill her. (26) I had 550 Deutsche marks hidden in my sock and I gave it to him. (27)

"They were not policemen. (28) They were criminals Milosevic let out of jail. (29) It is not so easy to earn money. (30) But I don't care about the money. (31) They wanted to kill my parents. (32)

"In every house they broke the doors," she said crying. (33) "When we went out everyone was in the street walking between men with black masks and big weapons." (34)

She described the forced march and a sleepless night at the railroad station. (35)

"All Priština is empty today," she said. (36) "No Albanians. Only Serbs with guns, they all have guns. (37) Can the world see what they are doing?" (38)

The long lines of silent, shaken refugees, many crying, stretched all around her. (39) Among the seemingly endless procession of people atop carts pulled by tractors was 98-year-old Shahin Jhabani, stretched motionless on a wheelbarrow, his feet in maroon socks dangling over the wheel. (40) Tucked around him were a few family possessions: a blanket, a pair of women's high heels and a bright child's jacket. (41)

By 7 o'clock tonight, some 13,000 people had crossed over the border, a process made painfully slow for much of the day by the Albanian authorities' insistence on a new procedure for registering the refugees. (42)

What they were registering mostly were the refugees' automobiles—which had been stripped of license plates by the Serbs—and they issued mimeographed pieces of paper good for a month. (43)

Late in the afternoon, after pressure from European aid officials and the flood of people on foot, the system quickened somewhat. (44) But in the darkness there were still thousands of people waiting to cross the border, backed up in a line nearly 10 miles into the Serbian territory. (45) And even as it inched forward, the line lengthened, with people from Priština and areas to the north. (46)

"They exploded something at the main door of our house," said one, Ruzhid Morina, 56. (47) "Four police with masks came in. (48) Their first demand was money. (49) The children were frightened and started to cry. (50)

"We took only the things we hand at hand, two blankets for the kids and a plastic sheet in case it rains," he said. (51) "All this happened in just five minutes, and we were made

to leave the house. (52) On both sides of the street were long lines of Serb police in masks and we had to walk between them to the train station." (53)

As the procession passed a movie theater, he said police officers in a white Opel Cadet cruised alongside videotaping him. (54)

After the march and the long night in the train station, Arsim Rahmani, 26, said, he could see from the windows of the bus that there were no ethnic Albanians. (55) "Our shops were looted," he said. (56) "There were only Serbs, driving our cars." (57)

At the border, many refugees seemed shattered at the thought of all that they had lost.(58) And yet many also experienced relief, like Mr. Rahmani and his wife, Aferdita, who was three months pregnant.(59)

"It is not important that now we are poor people," she said, leaning close to her husband. (60) "What is important is now I am not afraid." (61)

2.1. FINDINGS CONCERNING ATTITUDE. The *New York Times* article offers an example of how language may be used to evaluate a situation and present it as a piece of objective news. It also offers an opportunity to examine the rhetoric of war from the perspective of lexicogrammar and reader/writer solidarity. Highly evaluative, the text has a total of 62 examples of Attitude. In fact, language is used effectively to position the reader attitudinally toward adopting a pro-Albanian and anti-Serbian stance.

2.2. ATTITUDE: AFFECT IN THE TEXT. Within the system of Attitude, the subsystem Affect allows the writer to achieve one of the highest degrees of solidarity with the reader, since it is through Affect that the writer ultimately attempts to create a bond with the reader. There are only 11 examples of Affect in the text, but since Affect is concerned with how writers express emotion (either their own, or that of others), the evaluative target of Affect is therefore very important. In this case, the source of emotion is always the Kosovo Albanian Refugees, while the catalyst of that emotion is Serbian actions. Moreover, since a very specific incident is being depicted—the methodical emptying of Priština—all examples of Affect become relevant, but particularly those which offer authorial Affect, because they describe the author's own perspective and in that way position on the event. The only case of authorial affect in the text is (3) but it is couched within an example of negative Evoked Judgment. Nevertheless, that the author decides to depict the scene of Kosovo refugees as *heart-rending*, represents his feelings on the matter. Examples of non-Authorial Affect further serve to bring the reader closer to the scene; hence, specific emotional states of distress such as *wailing* (24; non-authorial Affect: distress), *collapsing* (24: non-authorial Affect: distress), and *crying* (34: non-authorial Affect: unhappiness) not only draw the reader in affectually, but present the reader with the writer's position towards this phenomenon. Coupled with the description of '*sleepless* nights at a railroad station' (35: non-Authorial Affect: insecurity, anxiety), and the image of *silent, shaken refugees crying* (39: non-Authorial Affect: insecurity: distress), the reader has no reason to doubt that in these cases the target of negative evaluation is none other than the Serbs, particularly since the emotional responses and dispositions of the Kosovo refugees

are being described as a direct result of the Serbia militiary or militia. Hence, in the context of situation with which it is presented, the reader has no reason to doubt the response as valid and justifiable.

2.3. EXAMINING ATTITUDE: JUDGMENT. There are 40 examples of Judgment (4 of Judgment: inscribed, 15 of Judgment: provoked and 21 of Judgment: evoked) and most are a negative evaluation of Serbian actions towards the Kosovo Albanian refugees. This is important, since judgment reflects a reader or writer's cultural and ideological perspective. Therefore, how a proposition is internalized has everything to do with the writer's representation of the information in the proposition and the reader's interpretation of the proposition. In order to achieve solidarity, the reader and the writer must both judge the actions of the Serbs as blameworthy. Hence, since Judgment may be expressed either explicitly or implicitly, the lexicogrammar becomes the deciding factor in solidarity because the writer always has the choice to present propositions explicitly, thereby using language which highlights his views, or implicitly, thereby letting the reader make his or her own evaluations of the target in question (White 2004).

2.3.1. JUDGMENT: INSCRIBED. Explicit or inscribed Judgment is the writer's way of sharing with the reader just how he or views the behavior of a person or group. Therefore, Judgment: Inscribed puts at risk the bonds of solidarity that the writer is trying to create with the reader. This risk is valid, because the writer always has choice with respect to how he intends to present information. This choice is important, since it tells the reader that the writer is about to assess the behavior of a person or group based on a set of arbitrary rules which categorize behavior as either appropriate or inappropriate, brave or cowardly, right or wrong, etc. If the reader does not agree with the writer's assessment then solidarity is at risk.

In order for the writer's evaluations to be effective in this text, for example, both the writer and the reader must agree that in each of the cases of Judgment: Inscribed (e.g. 2, 29) some value revered by society has been breached. Thus, in clause complex 2 (*In a chilling display of force, Serb gunmen are systematically emptying Kosovo's capital city, Priština, marching its ethnic Albanians out*) what is at stake is the realization that the Serbs are systematically emptying Kosovo's capital city, an act of violence likened to the actions of a totalitarian regime. Similarly, 29 (*They were criminals let out of jail*) has the value laden term *criminals*, which not only categorizes the act but labels the individuals charged with it. Hence, in order for the writer's evaluation to be effective and to maintain reader solidarity, the writer must guarantee that the reader is as likely to feel offended, disgusted, appalled by the behavior of the target of evaluation. Clause complex 2 provides an example of Judgment: inscribed: negative: social sanction: propriety, because the writer has put himself on the line by evaluating the actions of the Serbs as *chilling* and *systematic*. Since both terms imply a calculated and intended harm, the assumption is that his explicit evaluation will initiate a negative response towards the target of the evaluation (Serbian men, military, and militia). Couple this with clause complex 3 (*More than 10,000 Kosovars arrived here today…*)

(Judgment: evoked: negative: social santion: propriety), and it becomes clear that the writer has effectively managed to heighten the reader's awareness of the blameworthy actions of the target of his evaluation: the Serbs.

2.3.2. EVOKED AND PROVOKED JUDGMENT. It is through the use of evoked and provoked Judgment that the writer takes his greatest risks. This is so because assessment of Judgment is based to a large degree on the cultural and ideological backgrounds of the reader. In order for the writer and reader to see eye to eye, the writer must assume that the reader more or less shares the same perspectives of what he deems either ethically and morally right and wrong, and/or culturally correct or incorrect behavior. Unlike Judgment: Inscribed, which uses an explicit evaluative term or phrase to position the writer's stance, provoked and evoked judgment present the proposition in either an indirect or factual way. Therefore, from the position of solidarity, there is more at risk.

2.3.2.1. JUDGMENT: PROVOKED. Judgment: Provoked is that type of Judgment which employs tokens. These tokens are types of evaluative wordings which act to direct the reader towards creating a Judgment response. In cases of Judgment: Provoked the reader is recognizing inferences in the form of evaluative language and these inferences lead to a judgment of one kind or another. In the case of this specific article, there are 17 examples of Judgment: Provoked (1, 6, 11, 12, 13, 17, 18, 22, 25, 26, 32, 34, 44, 47, 48, 56, 60). Each requires that the reader make his or her Judgment call on the basis of an implicit token. How a reader interprets these examples is directly effected by his or her own interpretation of the situation based on personal, ideological, and socio-political factors.

The very first case of Judgment: Provoked is found within the headline itself: 'Refugees tell of Methodical Emptying of Priština' (1). As a term, *refugees* is value laden, since it is used solely to apply to a group of people who are fleeing their own country and seeking refuge elsewhere. Often, refugees flee to avoid persecution or death. Methodical emptying describes not only the process of events, but also supplies the reader with an image akin to a totalitarian regime and the transport of parts of the population to camps for political or racial reasons. Together, the two function as an excellent example of negative Judgment: Provoked.

Another case of Judgment: Provoked is that of clause complex 22, which uses evaluative language such as *refugees* and *dumped out* as well as the type of historical inference mentioned above to evaluate Serb military and militia: *Many refugees spent hours packed into the buses and trucks until they were driven south past burning villages early in the morning and dumped out at the last village, Szhur, to walk the final few miles to the border.*

2.3.2.2. JUDGMENT: EVOKED. White (1998; 2000), defines cases of Judgment: evoked as any purely factual information presented to the reader, but which nonetheless has the potential of inference. There are 25 examples of Judgment: Evoked (3, 4, 8, 9, 10, 14, 15,

20, 23, 24, 27, 28, 33, 37, 38, 43, 45, 46, 49, 51, 52, 53, 54, 55, 57) and each relies heavily on reader interpretation of the information given. Essentially, what is at stake here is the writer's ability to present factual information in a strategic way, so that the reader can make an assessment on the basis of shared ideological and cultural views.

Clause complex 20 is an example of Judgment: evoked: negative: social sanction: propriety, because the reader is required, without the use of evaluative markers, to grasp the proposition as an example of an extreme, inhuman situation. Therefore, if in clause complex 20 (*at least three babies were born last night in railroad stations*) the reader judges the Serb actions as examples of negative: propriety, he or she will do so on the basis of his or her own cultural expectations and the assumption that most people require better treatment of pregnant women and innocent babies. The same may be said of clause complex 21 (*During the night, the refugees said the Serbs brought in fleets of buses and large trucks, including freezer trucks of the kind used to transport beef*). The importance is one of association between the actions of the Serbs and those of a totalitarian regime. Moreover, although nothing specific is being said to compare the two explicitly, there are innuendos. Further, there is an agenda here, since a comparison may be made between the type of trucks used (*freezer trucks*) and the value of the people (being herded into them like cattle). In other words, if the writer intended that the reader be impacted by this information, then the effect of the words combined with the visual image is just so.

3.0. EXAMINING ATTITUDE: APPRECIATION. The subsystem Appreciation is concerned with assessments that are made of products, processes, plans, policies and/or people when they are viewed as objects (White 1998, 2004). Appreciation is grouped into three subcategories: valuation, composition, reaction, and the text carries examples of each: four of valuation (see: 34, 36, 37, 40), four of composition (see: 5, 30, 42, 44) and three of reaction (see: 2, 3, 42). Examples of each are given below.

3.1. APPRECIATION: VALUATION. There is a particular relevance to the fact that the text contains four examples of Appreciation: valuation because the subcategory of valuation is concerned with values which refer to or are somehow derived from emotion. When something is classified as valuation what is being assessed is how an object or a process is evaluated according to social conventions from the perspective of whether it was either particularly significant (important, noteworthy, crucial) or harmful (damaging, dangerous, unhealthy) (White, 2004). In clause (36) *All Priština is empty today*, attention is now on the city of Priština and not on the Serbs who emptied it. Priština has become the object of concern and from the perspective of social convention this is both noteworthy and worrisome, since a city is not meant to be empty; it is meant to be full of life. Clause (37) reiterates the desperation: *No Albanians. Only Serbs with guns, they all have guns.*

3.2. APPRECIATION: COMPOSITION. Rhetorically, all of the instances of Appreciation within the text work towards strengthening the writer's evaluative stance and creating

a bond of solidarity with the reader. However, clause complex (5) threatens the writer's position, since it alludes to the destruction of a city and thus, opens up the issue of who has done the damage: *They were people of Priština, once an urban center with a university, coffee houses, cinemas and newspapers.* Hence, the writer is evaluating the discordant structure of the city at the same time as he is alluding to who may be the cause of Priština's demise. By classifying this clause complex as an example of Appreciation: composition: negative: discordant the concern is with how well the city fits together and not on who caused the downfall of Priština. However, since Appreciation and Judgment are at times intricately linked, much of what is interpreted depends not only on the reader's own cultural and ideological expectations, but on the context of the information as well. The problem in this clause complex has to do with interpretation, since Priština was an urban center until NATO bombs started falling. Thus, depending on whether a reader is for or against NATO intervention, solidarity may be at risk.

3.3. APPRECIATION: REACTION. The text also contains three examples of Appreciation: reaction: negative (2, 3, 42). In clause complex 2, '…*through gantlets of masked, heavily armed Serbs'*, the subclassification of reaction: negative assesses the Serbs as objects, making them a property of the evaluated entity. Therefore, what is being evaluated is the presentation of the spectacle, how it effects the senses: Appreciation: reaction: negative: appalling. The description of the Serbs, taken with the information provided by the headline and the first part of the clause complex, increases the reader's negative reaction to the entire process of the Kosovo Albanian evacuations. In this way, Appreciation also further enhances writer and reader solidarity, since this instance of Appreciation:reaction is consistent with the overall attitudinal purposes of the text—namely encouraging a pro-NATO, anti-Serb stance.

4.0. DISCUSSION AND CONCLUSION. This article uses language in a strategic way to create a divide between the amoral and unacceptable behavior of the Serbs—Milosevic's criminals (29)—and the brave Kosovo Albanian victims (60). In fact, the reader is told that Serbs draped in *weaponry* (13) are *methodically* (1) and *systematically emptying Kosovo's capital city Priština at gunpoint* (2), at the same time as Serbian *tactics* are compared to a those of a totalitarian regime (6), which is never explicitly identified, just alluded to. Hence, the reader walks away with specific propositions in mind: that *tens of thousands of refugees are arriving in neighboring states in search of sanctuary and shelter* (18) and that *families have been divided, split into groups and packed into freezer trucks* (21)—stark and eerie reminders of totalitarian tactics.

Affect and Appreciation, like Judgment, further create a divide between the two actors in this conflict, the Serbs and the Albanians. The author himself depicts the scene as heart-rending in clause complex 3, while 5 describes Priština's demise from an urban center to a ghost town. In all, the rhetorical effect of the article is clearly one where the writer has set about representing the brutality of the Serbs and creating a very specific divide between the good guys and the bad guys. Further, the situation

is depicted as one where the negative targets of evaluation can only be Serbian. And although reference is made to an empty Priština, the possibility of the emptiness being a direct result of NATO bombs is avoided.

In a rhetoric of war, how information is expected to be interpreted has everything to do with how it is presented, and therefore, evaluative targets are meaningful (White 1998, 2004). From the position of the system of Attitude, what becomes obvious is that the language of war discourse presents not just facts; it presents informational utterances—propositions that have Interpersonal value. This Interpersonal value is effected by the reader-and-writer relationship, since by making evaluations, passing judgments and appraising situations the writer is counting on the reader's support and agreement. The problem is that this text is one-sided. It takes a pro-NATO, pro-Albanian perspective and focuses entirely on an Albanian representation of events. Moreover, although it may be that Serb gunmen, military and militia did in fact exacerbate the refugee situation, there is also much to be said about the constant barrage of NATO bombs which had been falling on Priština at that time. Furthermore, although the reference to totalitarian tactics is obvious, there are specific differences which are not spelled out, specifically that when the Serbs split the Kosovo Albanians into groups they did not do so one the basis of sex but rather, randomly (16). Finally, under the NATO bombardment, no one remained in Priština: not the Gypsies, not the Serbs and not the Albanians.

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REPRESENTATION OF SHAPE BY ENGLISH AND CHINESE SPEAKERS

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LINGUISTIC RELATIVITY is a hypothesis about the extent to which language influences perception and cognition. It is also known as the Sapir-Whorf Hypothesis for its proponents Edward Sapir (1929) and Benjamin Lee Whorf (1940). The strong interpretation states that language determines thought. The weak interpretation states that language facilitates people's habitual thinking (e.g. Lucy 1992). Since the strong form is no longer retained, researchers have attempted to test the weak form. Earlier empirical studies on language relativity focus on cross-linguistic differences in lexical items, especially color terms (Brown & Lenneberg 1954, Lenneberg & Roberts 1956, Berlin & Kay 1969, Heider & Oliber 1972, Heider 1972). The results from these studies concluded that people perceive color in a similar way regardless of the differences in which colors are lexicalized in languages. These results have been interpreted as disconfirming the linguistic relativity hypothesis. However, the linguistic relativity hypothesis has drawn renewed attention as a result of findings of cross-linguistic differences (e.g. Imai & Gentner 1997, Lucy 1992, Roberson, Davis & Davidoff 2000, Roberson, Davidoff & Shapiro 2002, Zhang & Schmitt 1998).

I address the issue of linguistic relativity by looking at Mandarin Chinese, a classifier language, and English, a non-classifier language. Chinese requires classifiers when numerals or demonstratives are present. Different nouns go with different classifiers, where classifiers group nouns into classes by semantic properties such as shape, material, and size (Tai 1994). For example, the classifier *tiao* co-occurs with nouns denoting long objects such as *shenzi* 'rope', *xiaohuanggua* 'cucumber', and *maojin* 'towel'. The semantic bases for classifiers have been found to be psychologically real for Chinese speakers. Tien, Tzeng and Hung (2002) combined data independently collected from a noun-feature rating task and a noun classifier collocation judgment task and found that participants used noun feature as a valid cue in acceptability judgments of classifiers. For example, participants rated *shengzi* 'rope' to be long and accepted *shengzi* 'rope' to go with the long classifier *tiao*. This paper examines whether these categorization bases are common to speakers of other languages—more precisely, whether English speakers agree with Chinese speakers on the shape features picked out by Chinese classifiers.

I hypothesize that the shape feature (long, flat, or round) used for classification in the language should be perceived more saliently than other features. To test this hypothesis, two studies were conducted to examine the perceived shape salience and representation of shape by Chinese and English speakers. In Experiment 1, pictures were given to make sure that the participants rated the same objects intended by the

researcher. In Experiment 2, only written words were used as stimuli to assess the salient shape features of the prototypical denotations of these words in participants' mental representations.

1. EXPERIMENT 1: PERCEIVED SHAPE SALIENCE.

1.1. PARTICIPANTS. The participants were 30 adult native speakers of Mandarin and 29 adult native speakers of English, all college students. The Mandarin speakers were majors in various subjects other than English in Taiwan. All but two of the English speakers were undergraduates enrolled in an Introduction to Linguistics class at a university in the US. Two undergraduates who missed items were later replaced by two graduate students, one in education and the other in human resources.

1.2. MATERIALS. The materials consisted of eighteen pictures depicting objects denoted by nouns collocating with shape classifiers in Mandarin. The pictures were drawn and colored by the researcher. I focused on objects that are flexible in the sense that their shape can be manipulated, as with clothing, or on objects that differ in shape in the US and in Taiwan. For example, eggplants and radishes are typically round in the US, but they are typically long in Taiwan. The picture of eggplants resembled Chinese eggplants and that of radishes resembled American radishes, so that English speakers and Mandarin speakers had an equal number of unfamiliar objects. There were six long items, six flat items and six round items. Long items were items denoted by nouns conventionally collocating with classifiers *tiao/gen/zhi* in Mandarin. Flat items were items denoted by nouns collocating with the classifier *zhang* in Mandarin. Round items were items denoted by nouns collocating with classifiers *ge/ke/li* in Mandarin. Efforts were also made to include different taxonomic kinds such as food and artifacts. The list of stimuli is given in **Table 1**.

The pictures were made into a PowerPoint file and projected on the screen one at a time. Each slide contained one picture. There were seven seconds between slides for participants to write on their response sheets. The response sheets contained a list of nouns and three cells for long, flat, and round scores respectively. The response sheets for Mandarin speakers were in Chinese, and those for English speakers were in English.

1.3. PROCEDURES. The participants were tested in two groups—English speakers and Mandarin speakers. They were asked to rate the shape of the objects in the pictures, assigning points for shape features such as long, flat, or round on a 1 to 5 scale. A score of '1' indicates that the participant totally disagrees that the object has the feature and '5' indicates that the participant totally agrees that the object has the feature. A native speaker of Mandarin who was also fluent in English gave the instructions.

1.4. DATA ANALYSIS. The shape rating scores for each item were averaged across participants, and served as an indicator of the salience of the shape of each object. Some participants gave a response of 0 by mistake, which was recorded as 1. The mean scores for items collocating with each shape classifiers were calculated, and ANOVAS were

	items	classifier	gloss	order A
1	towel	*tiao*	long	1
2	quilt	*tiao*	long	5
3	pants	*tiao*	long	9
4	fish	*tiao*	long	10
5	eggplant	*tiao*	long	15
6	radish	*gen*	long	17
7	paper	*zhang*	flat	2
8	picture	*zhang*	flat	4
9	CD	*zhang*	flat	8
10	table	*zhang*	flat	12
11	chair	*zhang*	flat	13
12	bed	*zhang*	flat	18
13	balloon	*ge*	round	3
14	pear	*ge*	round	6
15	candy	*ke*	round	7
16	egg	*ke*	round	11
17	stone	*ke*	round	14
18	rice	*li*	round	16

Table 1. *List of items for perceived shape salience study.*

conducted with language as the between-subject factor. In addition, the scores for the shape feature encoded in the Mandarin classifiers were added for each language group. For example, for 'towel', only the score for longness was used, because *maojin* 'towel' goes with the long classifier *tiao* in Mandarin. The scores reflect the correspondence between perceived shape and the semantic bases of Mandarin classifiers. Then, a t-test was conducted with the total scores of the two groups to test whether there was a significant difference between Mandarin and English participants' perception of the shapes of the test items. Also, a correlation was conducted for the mean ratings between English and Mandarin speakers for all the features for all items.

1.5. RESULTS AND DISCUSSION. **Table 2** (overleaf) shows means for perceived shape salience rating on items collocating with the flat classifier—*zhang* in Mandarin. The bolded numbers indicated the highest shape feature. Both English and Mandarin speakers gave highest score to flatness, which is the semantic basis for classifiers for these items. There was no significant difference in ratings between English and Mandarin speakers except for roundness.

    Table 3 (overleaf) shows means for ratings of perceived shape salience on items collocating with round classifiers (*ge, ke, li*) in Mandarin. Both English and Mandarin speakers gave the highest score to roundness, which is the semantic basis for

LANGUAGE		LONG	FLAT	ROUND
Mandarin	Mean	2.27	**3.48**	1.93
	Std. Deviation	.58	.87	.36
	N	30	30	30
English	Mean	2.27	**3.87**	1.74
	Std. Deviation	.50	.65	.20
	N	29	29	29
Total	Mean	2.27	3.67	1.84
	Std. Deviation	.54	.788	.30
	N	59	59	59
ANOVA by language		p>.05	p>.05	p<.05

Table 2. *Means for items collocating with the flat classifier, ratings with pictures.*

LANGUAGE		LONG	FLAT	ROUND
Mandarin	Mean	1.72	1.71	**4.01**
	Std. Deviation	.49	.53	.70
	N	30	30	30
English	Mean	1.34	1.39	**4.11**
	Std. Deviation	.37	.41	.51
	N	29	29	29
Total	Mean	1.54	1.56	4.06
	Std. Deviation	.48	.50	.61
	N	59	59	59
ANOVA by language		p>.05	p>.05	p<.05

Table 3. *Means for items collocating with round classifiers in ratings with pictures.*

classifiers with these items. There was no significant difference in ratings between English and Mandarin speakers for roundness. There were differences for longness and flatness, which were not important for classifiers for these items.

Table 4 shows means for ratings for perceived shape salience on items collocating with long classifiers (i.e., *tiao, gen, zhi*). English and Mandarin speakers did not differ significantly on the scores for longness and flatness. They differed in the scores for roundness, which is not the crucial for classifiers for these items. Both English and Mandarin speakers gave the highest scores to flatness. Flatness was thought as the most salient feature of these items. This is inconsistent with Chinese classifiers. The salience of flatness may be the result of two-dimensional representation of pictured objects.

LANGUAGE		LONG	FLAT	ROUND
Mandarin	Mean	2.65	**3.08**	1.97
	Std. Deviation	.58	.78	.48
	N	30	30	30
English	Mean	2.88	**3.22**	1.73
	Std. Deviation	.56	.71	.29
	N	29	29	29
Total	Mean	2.76	3.15	1.86
	Std. Deviation	.58	.74	.41
	N	59	59	59
ANOVA by language		p>.05	p>.05	p<.05

Table 4. *Means for items collocating with long classifiers, ratings with pictures.*

Language	N	mean	Std. Deviation
Mandarin	30	3.50	.56
English	29	3.69	.48

Table 5. *Target picture shape rating scores of Mandarin and English speakers.*

The means for the features encoded in Chinese classifiers was 3.50/5.0 for Mandarin speakers and 3.69/5.0 for English speakers as summarized in **Table 5**. No difference was found between English and Mandarin speakers (p>.05) in overall ratings for target features.

The correlation of mean ratings between English and Mandarin speakers for all features of all items was .93, meaning that they rated the shape of pictures in a similar way. For example, objects rated as long by Mandarin speakers were also rated as long by English speakers. English and Mandarin speakers gave the top scores to the same feature for 15 out of 18 items. Twelve of these were the same features encoded by the Mandarin classifiers. So English and Mandarin speakers agreed on the salient shape features encoded in Mandarin classifiers most of the time.

2. EXPERIMENT 2: REPRESENTATION OF SHAPE.
2.1. PARTICIPANTS. The participants were 30 adult native speakers of Mandarin and 30 adult native speakers of English. They were all college students. The Mandarin speakers were enrolled in an English class for non-majors at a university in Taiwan. Most of them were education majors. Twelve were males and 18 were females. The English speakers were enrolled in the Language and Society class at a university in the US. Most of them were also education majors. Eight were males and 22 were females. Since the sources of participants were existing classes, gender could not be balanced.

LANGUAGE		LONG	FLAT	ROUND
Mandarin	Mean	**3.67**	3.02	2.28
	Std. Deviation	.82	.63	.76
	N	30	30	30
English	Mean	3.07	**3.16**	2.38
	Std. Deviation	.46	.39	.38
	N	30	30	30
Total	Mean	3.37	3.09	2.33
	Std. Deviation	.73	.52	.60
	N	60	60	60
ANOVA by language		p<.05	p>.05	p>.05

Table 6. *Means for items collocating with long classifiers without pictures.*

2.2. MATERIALS. The materials were the same list of nouns as in Study 1 given without pictures. The response sheets contained a list of nouns and three cells for long, flat, and round scores respectively. The response sheets for Mandarin speakers contained Chinese characters without classifiers, and those for English speakers contained English words. The trials were presented in two opposite orders. Half of the participants were given Form A and the other half were given Form B.

2.3. PROCEDURES. The participants were tested in two groups—English speakers and Mandarin speakers. They were asked to rate the shape of the denotations of the words, assigning points for shape features such as long, flat, or round on a 1 to 5 scale. A score of '1' indicates that the participant completely disagrees that the denotation has the feature and a score of '5' indicates that the participant completely agrees that the denotation has the feature.

2.4. DATA ANALYSIS. The shape rating scores for each item were averaged across participants and served as an indicator of the salience of the shape cue of an object. Some participants gave a response of 0 by mistake, which was recorded as 1. The means for items collocating with each shape classifier were calculated. Also, the scores for shape features encoded in the Mandarin classifiers for the test items were added for each language group. The scores indicate the correspondence of responses to the semantic bases of Mandarin classifiers. Then, a t-test was conducted with the total scores of two groups to test whether there was a significant difference between Mandarin and English speakers. A correlation coefficient was also calculated for means between English and Mandarin speakers for all features of all items.

2.4. RESULTS AND DISCUSSION. **Table 6** shows means for items collocating with long classifiers. When pictures were not given, Mandarin speakers gave the highest scores

LANGUAGE		LONG	FLAT	ROUND
Mandarin	Mean	2.62	**3.94**	2.30
	Std. Deviation	.85	.84	.91
	N	30	30	30
English	Mean	2.64	**4.25**	2.32
	Std. Deviation	.54	.51	.52
	N	30	30	30
Total	Mean	2.63	4.09	2.31
	Std. Deviation	.70	.71	.73
	N	60	60	60
ANOVA by language		p>.05	p>.05	p>.05

Table 7. *Means for items collocating with the flat classifier without pictures.*

to longness for items collocating with long classifiers. English speakers still gave the highest scores to flatness. The rating scores for longness differed significantly between English and Mandarin speakers $F(1/59) = 12.16$, $p<.05$. No reliable difference was found for flatness and roundness.

Table 7 shows means for items collocating with the flat classifier *zhang* when pictures were not given. Both English and Mandarin speakers gave the highest scores to flatness. They agreed that the most salient feature for these items was flatness, which is consistent with the Mandarin classifier system. The rating scores did not differ significantly between Mandarin and English speakers on any feature.

Table 8 (overleaf) shows means for items collocating with round classifiers when pictures were not given. Both English and Mandarin speakers gave the highest scores to roundness. They agreed that the most salient feature for these items was roundness, which is consistent with the Mandarin classifier system. There was a significant difference between Mandarin and English speakers in scores for roundness, but not in scores for longness or flatness.

The shape rating scores for features used as the classification basis by Mandarin classifiers were higher for Mandarin speakers than for English speakers, as shown in **Table 9** (overleaf) (t = 2.045, p<.05).

The correlation for the means between English and Mandarin speakers for all features of all items was .85. English and Mandarin speakers agreed on the salient feature for most items except *fish, eggplant, radish, table, bed* and *rice*. The most highly rated features were consistent with the categorization bases of Mandarin classifiers for all items except *towel* and *quilt*, both of which go with the long classifier *tiao* but were rated as flat by both Mandarin and English speakers.

3. COMPARISON BETWEEN THE TWO EXPERIMENTS. From the results of perceived shape salience and the representation of shape, there were no significant differences between

LANGUAGE		LONG	FLAT	ROUND
Mandarin	Mean	2.04	2.21	**4.20**
	Std. Deviation	.91	.71	.56
	N	30	30	30
English	Mean	1.69	1.94	**3.73**
	Std. Deviation	.57	.54	.54
	N	30	30	30
Total	Mean	1.87	2.07	3.96
	Std. Deviation	.78	.64	.60
	N	60	60	60
ANOVA by language		p>.05	p>.05	p<.05

Table 8. *Means for items collocating with round classifiers without pictures.*

Language	N	mean	Std. Deviation
Mandarin	30	3.93	.56
English	30	3.68	.48

Table 9. *Target shape rating scores of Mandarin and English speakers.*

Mandarin and English speakers in ratings with pictures (p>.05) while there was a difference in ratings without pictures (p<.05). Speakers of English and Mandarin have the same perception of pictures, though they may have different mental representations of the prototypical shapes denoted by specific words, as shown in **Figure 1**.

Mandarin speakers' ratings without pictures were more consistent with Mandarin classifiers than ratings with pictures (t = -3.077, p<.01), as shown in **Table 10**.

On the contrary, English speakers' ratings with pictures were more consistent with Mandarin classifiers than without pictures (t = -.271, p<.05), as shown in **Table 11**. English speakers' perception of pictures is to some extent consistent with the categorization bases of Mandarin classifiers, while their prototypical denotations of words may be different.

No difference was found in shape ratings with pictures between Mandarin and English speakers, while there was a difference without pictures. The results indicate that Mandarin and English speakers perceive shape in a similar way, though their prototypical mental representations of the referents may be different. Both groups agree on the salient features of objects picked out by Mandarin classifiers. This suggests that English speakers learning Mandarin should be able to predict the classifiers based on shape. This implies that semantic links with other conceptual categories can also be useful for second language learners. It is worth exploring other links in future research.
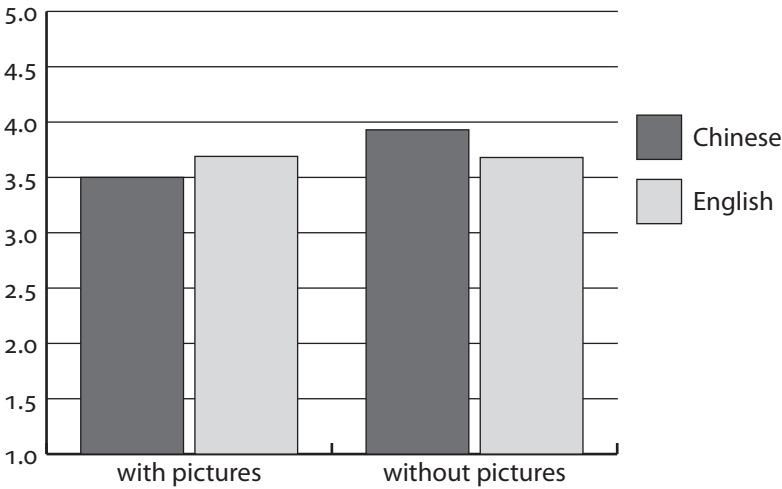
Figure 1. *Comparison between rating with pictures and without pictures.*

Task	N	mean	Std. Deviation
with pictures	30	3.50	.559
without pictures	30	3.93	.539

Table 10. *Mandarin speakers' ratings with pictures and without pictures.*

Task	N	mean	Std. Deviation
with pictures	30	3.71	.361
without pictures	30	3.58	.410

Table 11. *English speakers' ratings with pictures and without pictures.*

Another direction for future research is to do shape rating with abstract nouns. Although they do not have denotations in the objective physical world, they take shape classifiers. For example, in Mandarin *falu* 'law' takes the long classifier *tiao*. *Yun* 'cloud' and *tian* 'sky' take the flat classifier *pian*. *Xiangfa* 'idea' and *liuyan* 'message' go with the round classifier *ge*. Classifiers are so important for Mandarin speakers that I have even observed them being used with English nouns during code-switching, for example, *ni you yi ge message* 'there is a message for you'. It is interesting to see that Chinese speakers rate these nouns according to the classifiers they use in their native language.

comments from anonymous reviewers and participants at the 31st Forum of the Linguistic Association of Canada and the United States. Please send correspondence to Jenny Yi-chun Kuo at jennykuo@mail.ncyu.edu.tw. or to the Department of Foreign Languages, National Chiayi University, 85 Wenlong, Minhsiung, Chiayi 621, Taiwan.

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FASHIONS IN THE NAMING OF CHILDREN

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AT CERTAIN TIMES[1], a name little known within a society began to be taken up by the parents of many new-born boys. Well documented in England is William, after the king—from Normandy—won the battle of Hastings in 1066. People thus, throughout England, expressed loyalty to William and accepted his victory[2]. They also wished their own child to grow up a warrior like him. The meaning of this name commended it all the more. German leaders, who during the collapse of the Roman empire had settled in Gaul, Italy, and Spain, remained aware that the two syllables from Old High German stand for a warrior's 'will + helm'. Nearly every name of a person—or of a place—was meaningful in its original language; but this is liable to grow obscure over generations or centuries.

As many girls as boys were born to English parents, who admired not only the new king but also his Queen Matilda. So this Germanic name Machthilde too, for the first time, caught on in England; it eventually settled down as Maud. In further generations, the English diminutives Will and Matt gave rise to patronymic surnames: Wilson and Matson or Madison[3].

Esteem for a great man's exploits turns up anew, even today. Countless Muslims, since September 11, 2001, have named their baby Osama bin-Ladin. The meaning of the warrior's name often reinforces its attractiveness. In between the Trojan hero Ἀλέξανδρος or Πάρις (in the Iliad) and the Macedonian prince Ἀλέξανδρος, born centuries later, a few other Greeks called ΑΛΕΞΑΝΔΡΟΣ are on record; the compound consists of an extended verb-root ἀλεξ- 'withstand' (or 'ward off') + an object 'man' – taken together, 'a champion against any man'. Since Alexander the Great, many other nations have taken the name over, with or without knowledge of the Greek language[4].

Native traditions, however, have been most effective in naming a child. The data are huge; but in modern languages, the most accessible sources are the realistic novels, which at the same time entertain us. Jane Austen's novels show that in England it was regular to name the first son after the father and the first daughter after the mother.

Persuasion begins thus:

Sir Walter Elliot… never took up any book but the Baronetage… This was the page at which the favorite volume always opened:

ELLIOT OF KELLYNCH HALL

'Walter Elliot, born March 1, 1760, married July 15, 1784, Elizabeth, daughter of James Stevenson, Esq., of South Park, in the county of Gloucester; by which lady (who died 1800) he has issue, Elizabeth, born June 1, 1785; Anne, born August 9, 1787; a still-born son, November 5, 1789; Mary, born November 20, 1791.'… Sir Walter had improved it by adding, … after the date of Mary's birth: 'Married, December 16, 1810, Charles, son and heir of Charles Musgrove, Esq. of Uppercross, in the county of Somerset'… Then followed the history and rise of the ancient and respectable family… exertions of loyalty, and dignity of baronet, in the first year of Charles II with all the Marys and Elizabeths they had married… Heir presumptive, William Walter Elliot, Esq., great-grandson of the second Sir Walter.

Besides a new Walter in each generation, or a Charles, another motive determined that a grandfather be commemorated. *Papponomy*, the technical term (from the Greek pet name πάππα for 'grandfather'), is not on record, according to the revised *Oxford English Dictionary* (1980, but it cites the related noun **papponymic** from M. A. Lower, 1875). The practice, according to anthropologists, has gone on in most parts of the world.

A feminine counterpart keeps reusing the names of deceased women. In England the families would loyally go back to a few queens; these had been christened in reverence for the saints of the Gospels[5]. For a baby girl, not many traditional names were available in Jane Austen's time, and never in most other societies. The field was enlarged by adding a feminine suffix to a man's name[6]. The daughter Georgiana Darcy in *Pride and Prejudice*, no less than George Knightley in *Emma*, typifies an English rural family that accepted the incoming king, George (duke of Hanover) after the last of the Stuarts, Queen Anne, died childless in 1714. Likewise, Augustine Washington in Virginia named his son George, born in 1732.

Georgiana's brother Fitzwilliam Darcy illustrates a different pattern: placing upon a boy the family name from his mother's side, because the Fitzwilliam family was as eminent as the Darcy, or more so. Mr. Darcy's cousin is introduced in the story as Colonel Fitzwilliam[7]. The couples who named a son after the mother's family raised his standing above his father. As early as Dudley Digges (a diplomat) in the sixteenth century, some contrast between a plebeian and a noble background went along with the very sound of his two names. But little by little, English surnames were bestowed upon boys with no connection, on either side, to a Dudley family, or any Fitzwilliam, or any Elliot. If the parents—for whatever reason, or for none—liked the name, nothing else mattered.

Taking the caprice a step further, in the nineteenth century some began to call a daughter by what had been formerly a surname. That went on long enough to stoke a reaction; for example, Beverly—originally a family name, after a place with a beaver-lea nearby—was given in England to some boys and in America, during our time, to many girls. But any such name becomes inappropriate, from then on, for a male child.

As there are fewer familiar names for girls, the parents are inclined to choose whimsically. Mr. and Mrs. Bennet, in *Pride and Prejudice*, already had four daughters that they named conservatively after a saint or a queen: Jane, Elizabeth, Mary, Catherine[8]. But their fifth and last daughter, whom they treated more indulgently, was Lydia—a name known from love poetry in Latin and from an obscure woman baptized by Saint Paul (Acts 16:14–15).

Contemporary with Jane Austen were Mr. and Mrs. William Nightingale, who could afford long sojourns in Italy. A daughter born in Naples they named Parthenope; the father knew indirectly, through the epistles of Petrarch (in the fourteenth century), this other Greek name for the city. Their second daughter was born in Florence; the Latin *Florentia* is an abstract noun that means 'Bloom(ing)', and in modern languages the toponym undergoes minor phonetic modification. Florence Nightingale grew up to be a benefactor of humanity; during the Crimean War (1854–56) she turned the nursing of the sick and injured into a scientific profession. Ever since, thousands of girls have been named Florence[9].

For the neatest literary link between England and France, I turn to the novel *Madame Bovary*, set in the countryside of Normandy. Like Charles Musgrove of Uppercross in Somerset, Charles Bovary of Tostes was routinely named after his father, the physician. The tradition honoring a King Charles is much older in France, going back to Charlemagne. Among the English it began with Charles Stuart, born in Scotland not long before his father James was invited to London to succeed Queen Elizabeth Tudor.

Charles Bovary, with his pregnant wife Emma, moved from Tostes to Yonville-l'Abbaye near Rouen. When she bore a girl, the family discussed the choice of a baptismal name; and a friendly pharmacist joined in (Deuxième partie, Ch. III): 'M. Homais, quant à lui, était pour les prénoms symboliques ou rappelant à la pensée, un grand homme, une grande action, ou quelque pensée générale. Il avait dans ce système-là baptisé *tous* ses enfants. Ainsi Napoléon représentait la gloire, Franklin le savoir; Irma était une petite concession au romantisme, et Athalie était un hommage au chef-d'œuvre immortel de la scène française [Racine's tragedy].[10]'

The novelist nowhere goes into the main character's name Emma. Her mother, long deceased, is left utterly in the background. But in England the Norman princess Emma, who had married two kings, Æthelred and (upon his death) Canute, remained famous for beauty as well as leadership. We may speculate that some country people in Normandy too remembered her fondly.

It is at least a literary coincidence: the most gifted writer in English for a half-century, and her peer in French during the next generation, both chose this name for the nicest creature of their imagination. Frenchmen after the downfall of Napoleon were more willing to appreciate anything English. Especially the Monarchist refugees, who returned from England with Louis the XVIII, had outgrown any empty pride. They were thrilled by Shakespeare's plays; they relished broad lawns and seaside resorts. Any novel that the public in England liked was soon translated and won many French readers:

Raison et Sensibilité, ou Les Deux Manières d'aimer traduit librement de l'anglais (de Jane Austen) par Mme Isabelle de Montolieu, 1819.

Orgueil et prevention, par l'auteur de "Raison et sensibilite" traduit de l'anglais par Mlle E…*** (= Eloïse Perks.), 1822. The same year, a rival publisher in Paris brought out a version under the title *Orgueil et préjugé*.

Le Parc de Mansfield, ou Les Trois Cousines (1816).

La Nouvelle Emma, ou les Caractères anglais du siècle (1816).

La Famille Elliot, ou l'Ancienne inclination, traduction libre de l'anglais d'un roman posthume de miss Jane Austen (1821).

So, when Gustave Flaubert was writing *Madame Bovary* from 1851 through 1856, did he think about Austen's work? I take his Emma as a compliment to his finest predecessor. He must have reflected upon his own parents' choice of Gustave for him, as he composed the thoughts of his Emma picking out a name for her little girl: 'Enfin, Emma se rappela qu'à la Vaubyessard [the château where Charles and Emma had once been invited to a ball] elle avait entendu la marquise appeler une jeune dame Berthe; elle se décida pour Berthe et l'époque du baptême fut décidée'.

The great king of Sweden (known in most of Europe by the Latinization, Gustavus Adolphus) gained lingering approbation in France, when he won the battle of Lützen (1632, during the Thirty Years War) but died of a wound. Lutheran Sweden and Catholic France—under the regent Cardinal Richelieu—were oddly allied, to stop the House of Hapsburg in Vienna from defeating the Protestant forces of northern Germany; for that would have upset the balance of power across Europe.

Gustave Flaubert, by design if not accident, named his heroine the same as Jane Austen's. When his grateful readers wondered how he made Emma Bovary so true to life, and begged him to identify the real woman whom he had known so profoundly, he replied, 'Madame Bovary, c'est moi'. Likewise, the most believable characters in each novel by Austen are based upon the author's own experience.

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[1]   This essay was first read at a conference on 'Tropology' in March 2003, sponsored by the Department of Romance Languages and Literature at the State University of New York in Binghamton. Stanley Lieberson in *A Matter of Taste: How Names, Fashions, and Culture Change* (Yale University Press, 2000) has set forth his enormous research in this field. He and I, without being in touch with each other, came independently to similar conclusions.

For orally presenting on my behalf this paper to LACUS, in July 2004, I especially thank Stephen Straight, and I am grateful to the many members of LACUS who in my absence wrote out their individual greetings for me to read. At the session in Chicago the comment of John Peter Maher makes a substantial point: Contrary to the custom of naming after a leader in war, the names of the villains or losers at the end of the Second World War are not being handed down; no one now born in Germany is called Adolf, and in Italy no one now is named Benito. (The father of Benito Mussolini was an anarchist and admired Benito Juárez, the Mexican guerrilla leader that rebelled against Maximilian, the so-called 'emperor' of Mexico, and killed him in 1867.) For many earlier corrections also and substantial improvements, I am grateful to Peter Maher.

2   It would be worthwhile historical research to compare the parish registers in different parts of the country: Were fewer children named William in those counties which, after 1066, rebelled against the Conqueror (and against his successor, William the II)?

3   The genitive Wills became a surname less in England than in Wales, where the clerks took this English ending -s as equivalent to the Welsh prefix *P-* or *B-* for 'son of': in their records, a son of Owen would be either Bowen or Owens.

4   The fourth syllable was adapted in Latin to -der, in French to -dre. Through intermarriage of French and Scottish families, the name Alexander spread to Scotland in the seventeenth century and later, but scarcely into England.

5   They, like most Jews at the time of Jesus, were named after persons in the Hebrew Scriptures—not including the wives of the great Patriarchs.
      But Dissenters against the Established Church, in England as well as the colony of Massachusetts, preferred names out of the Old Testament to those of any recent king or queen. In *Mansfield Park,* Mr. and Mrs. William Price (of Welsh origin) named their younger daughter Susan (the English abridgement of Latin *Susanna* in the Apocryphal book). Her father called her Sue for short, and one younger son Sam (for Samuel, or for Samson?). Mrs. Price's hired servant is Rebecca—after the bride of Isaac in Genesis 24; she cooks for the Price family but does not attend church with them on Sunday.

6   So in ancient Greek, Ἀλεξάνδρα alongside the usual masculine Ἀλέξανδρος. If a name befitting a warrior had been chosen while a woman in the family was pregnant, it was adapted to the sex of the child upon birth. A clever comic poet called his female character Λῡσιστράτη (instead of the masculine Λῡσίστρατος 'Routing-an-army')—humorously appropriate to her plot to stop the war between her city and the Lacedaemonians.

7   *Fitz-* in Fitzwilliam (like Fitzgerald, Fitzhugh, etc.) takes the name back to a follower of William the Conqueror, who had begotten a son out of wedlock. The spelling of the common noun *fils* in modern French keeps some letters from centuries past, but the sound of the consonant -l- has been lost.

8   Saint Catherine, the most famous female disciple of Saint Francis, won admiration in England through the unhappy princess Catherine of Aragon, married first to Arthur, Prince of Wales, and secondly to his brother Henry. When she failed to bear the latter a healthy son, Henry divorced her and tried out one wife after another. The last two were Catherine Howard and the widow Catherine Parr.

9   Among Italians, the city kept the Latin name with the first syllable simplified to *Fio-* or *Fi-*. The exiled poet Dante addressed his lost hometown as Fiorenza (*Inferno* 26.1, etc.); but the ordinary modern form Firenze is based on the Latin locative case *Florentiae* 'in F.' Italian girls are named Fiorenza (e.g., the singer Fiorenza Cossotto) in honor of the English woman, since the kingdom of Italy—freshly reunited—was allied with Britain and France in the war against Russia.
      My maternal grandfather, David Finkel (a carpenter), and his young wife around 1890 emigrated from Odessa to Milwaukee. After her death he met a childless widow, likewise from Odessa; in their second marriage the children received the English names Florence, Lester, and Victoria. Jewish custom honors the deceased by commemorative naming, but is opposed to re-using the name of anyone living. David Finkel had long admired Queen Victoria (1837–1901); but he could not express it when one daughter was born in

1900. That birth enabled him, instead, to pay respect to the great Florence Nightingale. Lester was a simpler spelling of Leicester, in Old English a Roman fortress upon a lea nearby—thence an aristocratic family name. (Polish immigrants in America name a son Stanley for Stanislaw, or Chester for Czeslaw.)

10   In the nineteenth century, even more than this character Athalie from an emotional drama, the soprano heroine of an opera won sympathy from a broad public, and had many girls named after her. Norma, the Druid priestess, sang such thrilling words to the moon goddess:

> Casta diva che inargenti
> queste sacre antiche piante,
> a noi volgi il bel sembiante,
> senza nube e senza vel…

to the splendor of Bellini's music. And Wagner, in *Lohengrin*, wrote both his own libretto and the music that made Elsa von Brabant the model for many an Elsa in Germany and other countries, from the moment that she tells of her dream:

> Einsam in trüben Tagen
> hab' ich zu Gott gefleht,
> des Herzens tiefstes Klagen
> ergoss ich im Gebet.

CONTINUING WHERE SAPIR LEFT OFF:
VOCALIC ICONICITY IN ENGLISH

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Washington and Jefferson College

THIS PRESENTATION SEEKS TO FULFILL AN INTENTION Sapir expressed in his 1929 article, 'A Study in Phonetic Symbolism'. He defined this then still-novel concept as 'a more fundamental, a psychologically [more] *primary sort of symbolism* than the referential symbolism of language' (1929:225–26). He pointed to the 'emphatically diminutive /i/ of *teeny* as contrasted with the normal /aj/ in *tiny*' (226) as his first (and only) illustrative example.

Sapir (1929:227) devised an innovative phonetic experiment 'to ascertain if there tends to be a feeling of the symbolic magnitude value of certain differences in vowels'. The vowels /i/ and /a/ were contrasted, sandwiched between identical consonant components of contrived monosyllabic nonsense stimulus word pairs: nouns with supposedly identical semantic values. English-speaking respondents were to determine the relative sizes of the referent nouns, guided solely by their spontaneous auditory perceptions. Sapir (1929:231) concluded that English speakers perceived /a/ to have a greater potential magnitude symbolism than the contrasted vowel /i/, since about 80 percent of the more than 500 respondents designated referents with /a/ components as being larger. He obviously intended to carry on this inquiry, naming it a preliminary report on a further study which would 'probe into any such latent symbolisms that may be thought to exist' (Sapir 1929:226). Yet no publication on this topic appeared during the last decade of his scholarly work.

A considerable number of experimental and theoretical essays emulating Sapir's followed over the years, as well as empirical studies on iconicity in various languages. However, only one comprehensive study appears to be dedicated to exploring the specific area of verb tenses (Nyikos 1994). This work provides a comprehensive study of the iconicity of vocalic phonemes in tense formation of so-called irregular verbs in Germanic languages. A decisive alternation trend was found from present tense front vowels to past tense back vowels.

The iconic significance of this finding is the simultaneous occurrence of two powerful unconscious linguistic accomplishments:

(1) metaphoric transfer of abstract temporal concepts to physical-spatial ones;
(2) iconization, i.e. the infinitesimally miniaturized mirroring of real-world spatial relations by varying the sizes and shapes of the articulatory chamber.

Several other semantic fields appear to be involved in the iconic function of vocalic phonemes not only in English, but also in totally unrelated Hungarian, a member of the Uralic family of languages, where my findings include iconic vocalic phenomena similar (indeed near-identical) to those prevalent in English. These will be reported in a forthcoming paper.

What is presented here is by no means a systematic study of the impact of vocalic differences on semantic denotation in the English lexicon, but rather a few examples to illustrate the iconic function of vocalic phonemes in a selected group of nouns and verbs.

In order to start off with the simplest cases of sound symbolism, I intended to cite purely sound imitative examples. Yet my earnest search was frustrated by metaphoric dynamisms at work. I have come to realize that metaphoric interference appears to be unavoidable. While planning this article, I pinned much hope on the purity and simplicity of the noun *peep*, the feeble, shrill sound of a newly hatched bird as opposed to the noun *pop*, a sharp explosive sound, such as is created by a balloon bursting, until it hit me that *pop* also means a shot from a gun and by metaphoric transfer, the power to hit a baseball hard (as in the utterance, 'the hitter with some *pop* in his bat'). And to compound matters, by further metaphoric extension, it also means soda *pop* and a few more things, whose number would be substantially increased if the verb *pop* were added to the investigation.

Actually, I should not have been surprised. As a passionate and experienced linguist of 67 years, I have been bumping into metaphors throughout the five languages I have been dealing with for decades: instances of sound symbolism (or phonosymbolism), i.e. iconicity (or iconism) need by no means be exceptional.

As mentioned above, Sapir had his respondents compare and evaluate the magnitude values of contrived monosyllabic stimulus word pairs: nouns with allegedly identical semantic values whose vowels were /i/ and /a/ respectively. It seems logical to do the same with real words, with the proviso that in the overwhelming majority of cases, their most frequently used, concrete, tangible meanings should be considered while contrasting them mentally.

The area of sound imitation (echoism, onomatopoeia) is the field of iconicity per se and it is not only extensive—Saussure's allegations notwithstanding—but also quite subtle in differentiating between the semantic significance of high-frequency and low-frequency sounds. Let us focus on English: *clink* (a slight, sharp, short metallic sound), and *clunk* (the dull sound of a blow). In fact, it may denote a blow: the event, the happening of a blow. With a bit of metaphoric extension, *clunk* may also denote a dull or stupid person.

Consider the word pairs *tip* and *top*. It seems apparent that we refer far more often to the tip of smaller items such as a pen or pencil or one's finger or nose. We refer to the top of larger objects such as a tree, hill or mountain. Thus we refer to the top of our head, but to the tip of our nose, tongue and toes. While it is true that we speak of the tip of an iceberg, which is relatively large, the majority of its bulk (90%) is invisible under water. So the tip of the iceberg is small relative to the whole.

Considering the verb versions of these two words, the intensity of happenings they express appears to show similar ratios to the magnitude represented by the nouns just discussed. Placing it into the context of baseball, to *tip* is to strike lightly, to give the ball a glancing blow; to *top* it means to strike the ball above the center, thereby imparting a topspin. Other concrete contexts suggest analogous contrasts.

Dictionary definitions unanimously suggest that the noun *chip* signifies something small and usually worthless or trivial and the verb *chip* means to cut or break a small piece from something. The noun *chop*, on the other hand, stands for a forceful blow with an ax or cleaver or a sharp downward blow or stroke; of course the verb *chop* denotes cutting into presumably larger pieces or severing, usually by repeated blows of a sharp instrument or cutting into pieces.

The verb *whip* includes many denotations: to move something very quickly and suddenly, to strike with a slender, lithe implement (as a lash) and generally, to proceed nimbly; *whip* the noun describes various tools for variegated kinds of whipping, among them an instrument consisting of a handle and lash, a small kitchen utensil, and the result of its whipping: a dessert. The verb *whop* is to strike violently, to beat soundly, to defeat totally. Compare this to the noun *whop*, which is the very name for a heavy blow.

The noun *blip* is a short crisp sound, or a small luminous image on a radar screen or a brief temporary interruption of the sound received in a radio or television program or something relatively small within a larger context; the verb *blip* means to remove received sound from a recording so that there is an interruption of the sound; *blob* as a noun is a lump of a viscous substance (as of a jelly) or a spot or splash of color, or something of vague or indefinite form. The verb *blob* means to mark or splash with blobs.

The verb *knit* is to form series upon series of small connected loops into fabrics by interlacing yarn or thread with needles. The noun *knit* means such fabric(s) created by knitting. The noun *knot* represents an interlacement of the parts of one or more flexible bodies forming a lump or knob (from fastening or tying together); hence, the verb *knot* describes the process: to tie, fasten, or intertwine in or with a knot or knots.

The verb to *jig* is to move with rapid jerky motions, the noun *jig* stands for any of several lively springy dances. The verb *jog* is to go at a slow, leisurely pace, the noun *jog* is a movement, pace or instance of jogging (as for exercise) or a horse's slow measured trot. The noun *slip* is, among others, a small piece of paper, whereas a *slop* is a loose smock or overall.

The verb to *lift* means to elevate: to raise from a lower to a higher position; the noun *lift* means the distance or extent to which something rises, another is the component of the aerodynamic force that for an airplane constitutes the upward force that opposes the pull of gravity. The verb *loft* means to hit or throw (a golf ball, a baseball) into the air in a high curve or to propel something into space (by a rocket); the noun *loft* is the name of an attic-like space, an upper room or floor; a gallery, the choir loft in a church, the hay loft in a barn.

The noun *whiff* is a slight puffing or whistling sound or a quick puff or slight gust of air, odor, gas, smoke or spray; the verb *whiff* means to move with or as if with a puff of air. The noun *waft* is a sound or odor carried through the air, a slight breeze, a gust of wind.

Continuing where Sapir left off, I have been trying to select and present the vowels /ɪ/ and /a/ sandwiched between two identical consonants in current, frequently occurring real-life words, rigorously adhering to those components of the dictionary definitions which I judged to be salient or relevant to my demonstration of just how justified Sapir's thesis was.

It is important to note that the word pairs compared throughout this work may or may not be genetically linked or interrelated. Their etymology is immaterial to this investigation. The thrust of this study is to examine and evaluate the semantic values of their vocalic components and consider their individual iconic functions.

Before widening the scope of this study even further by the inclusion of yet another phoneme in addition to /ɪ/ versus /a/, let me conclude this section with one more example which, however, might seem somewhat less acceptable for two reasons:

(1) one of the two upcoming words which, on principle, should have identical components has a diminutive suffix attached to it and

(2) both belong to our most fundamentally used and overused vocabulary; considering them in a novel context may require stepping away from conventional perception.

These two words are *litt(le)* and *lot.* These juxtaposed words could be regarded as an example to illustrate that what they represent and what their vocalic phonemes mirror are an embodiment of the same thing. Such inseparable intertwining and fusion is the essence of sound symbolism (= phonosymbolism = iconicity).

I will henceforth desist from belaboring what at least by now should be the obvious, and juxtapose judiciously selected pairs of words (with a few brief references added) and hope that readers will rely on their Sprachgefühl, as did Sapir's 500 respondents, and recognize each word pair's specific relationship, which may go beyond such features as magnitude or speed and may involve other qualitative differences as well.

Take for instance the verb *flip* as compared to *flop*. They appear to mark their presence in one's consciousness with an array of various kinds of differences, all caused by the special vocalic nature of /ɪ/ versus /a/. Simple as they seem to be, their complexity may tend to overwhelm one's sense of distinction. This is why I strove to establish a frame of analysis by the comparisons above. Relying on these examples might lead to the analysis of pairs to become self-evident. (The pair *flip* and *flop* conclude the /ɪ/ versus /a/ group of words.)

In the following section, /ɪ/ will be contrasted with the lower central vowel /ʌ/, mainly because of the frequency of occurrence and use of these two vowels. Compare the following:

- the nouns *bit* (something small or unimportant of its kind) and *butt* (the larger or thicker end of something);
- the nouns *smidgen* (a small amount) and *smudge* (an indistinct mass);
- the verbs *mince* (to cut into small pieces (with comparably small motions)) and *munch* (to eat with conspicuous active chewing motions);
- the nouns *skim* (a thin layer on a liquid) and *scum* (impurities risen and formed on the surface of a liquid);
- the verbs *sniff* (to draw air audibly up the nose, especially for smelling) and *snuff* (to inhale through the nose noisily or forcibly, to smell inquisitively).

Diminutive suffixes appear in some of the pairs below and are placed in parentheses so as to draw attention only to a comparison of the roots of those words:

- the adjectives *nimb(le)* (quick and light in motion) versus *numb* (devoid of sensation or of emotion);
- the nouns *thimb(le)* (a cap on a finger) versus *thumb*;
- the verbs *crimp* (to cause to become bent and wavy) versus *crump(le)* (to bend or crush out of shape);
- the adjectives *mim* (affectedly shy and modest, primly quiet) versus *mum*;
- the verbs *fizz* (to effervesce) versus *fuzz* (to make or become fuzzy, blurred);
- the nouns *pimp(le)* versus *bump*;
- the verbs *heave* (to lift, raise) versus *hover* (to hang fluttering in the air). (In this section this is the only instance of /i/ versus /ʌ/).

In the next two items, /i/ contrasts with /ɑ/, the second lowest rounded back vowel:

- the noun *squeak* (a short, shrill cry) and the verb *squeak* (to utter or make such a cry), versus the noun *squawk* (a harsh, abrupt scream) and the verb *squawk* (to utter such a scream or to complain or protest vehemently);
- the noun *squeal* (a shrill, sharp cry) and the verb *squeal* (to utter such a cry) versus the noun *squall* (a violent windstorm) and the verb *squall* (to cry out raucously, to scream loudly and harshly or to blow a storm).

In the next example, /ɪ/ contrasts with /ɑ/, the second lowest back vowel. Compare the noun *pill* (a medicinal preparation in a small rounded mass) to the noun *ball* (a large spherical body or mass). An objection might be raised that the vowels are not sandwiched between identical consonants. But /p/ and /b/ both belong to the same class of stops: aspiration versus voicing respectively is the sole distinction. For the iconic evaluation of word pairs, these differences are marginal and inconsequential.

The next three items feature /i/ versus /o/ comparisons:

- the plural forms of the demonstrative pronouns this and that, namely *these* and *those*;

- the noun *leap* and the verb *leap* versus the noun *lope* (an easy natural gait of a horse) and the verb *lope* (to move or ride at a lope);
- the verb *reel* (to wind on a reel, to turn round and round, to be in a whirl) versus the verb *roll*.

The next four items contrast /i/ and /u/:

- the interjection *whee* (expresses delight and exuberance, extreme pleasure or enthusiasm, joy and exultation) versus *whew* (variously expresses amazement, discomfort, dismay, disgust or relief);
- the verb *seethe* (to be in a state of agitated movement, to suffer violent excitement versus the verb *soothe* (to relieve, alleviate, to bring comfort, solace, peace, composure, quietude);
- the verb *sweep* (to move swiftly, freely and mostly horizontally) versus the verb *swoop* (to move swiftly, but mostly downward from a height);
- the verb *deem* (to think, consider, judge) versus the verb *doom* (to judge mercilessly, to condemn).

In the next section, /ɪ/ and in one instance /i/ contrast with /æ/, the lowest front vowel:

- the verb *jingle* (to make a light, clinking sound; to rhyme or sound in a catchy, repetitious manner) versus the verb *jangle* (to make a harsh or discordant ringing sound, to quarrel);
- the demonstrative pronoun *this* versus the demonstrative pronoun *that*;
- the adjectives *slick* and *sleek* (smooth and glossy, well-kept) versus the adjective *slack* (slow, barely moving, sluggish);
- the verb *snip* (to clip suddenly or by bits) versus the verb *snap* (to seize something sharply with the mouth);
- the verb *nip* (to catch hold of, to squeeze tightly, pinch) versus the verb *nab* (to seize or snatch or steal);
- the noun *zip* (a short, sharp, hissing or whizzing sound as of a passing bullet)and the verb *zip* (to make or move with a zip) versus the verb *zap* to propel with immense speed, to apply destructive, concentrated force).

The next contrast is between /e/ and /a/ and between /e/ and /aw/:

- the verb *shake* and the noun *shake* versus the verb *shock* and the noun *shock*. The other pair is the verb *hail* (to greet with acclaim) versus the verb *howl* (to emit a loud doleful sound or to cry out loudly under strong impulse as pain or grief).

The last word pair compares /əʳ/ and /aʳ/: the noun *knurl* (a small protuberance/knob) versus the noun *knarl* (a protruding knot on a tree).

Continuing where Sapir left off has thus far led to the following methods and results:

(1) Instead of Sapir's contrived nonsense syllables, only real-life English words have been examined, most of them of high frequency occurrence.

(2) Ten additional categories of vocalic contrasts have been identified over and above Sapir's single example (/iːa/). Those categories, in order of their presentation are: (1) /ɪːa/, (2) /ɪːə/, (3) /ɪːʌ/, (4) /ɪːɑ/, (5) /iːo/, (6) /iːu/, (7) /ɪːæ/, (8) /eːa/, (9) /eːaw/, and (10) /əʳːaʳ/.

(3) By juxtaposing a considerable number of word pairs in order to determine their vocalic components' semantic values, iconic functions have been highlighted. It seems that extending this type of scrutiny to more than (near-)minimal pairs of lexical items may prove possible and equally productive.

Relying on the pattern just mentioned above, further semantic comments seem to be unnecessary and a simple listing should be self-explanatory (as in [4] below). The semantic distinctions between contrasting word pairs and word sets can, of course, be attributed solely to the character of their vocalic components, since their consonantal environments are identical.

(4) The result of continuing Sapir's preliminary investigation is that his one quantitative semantic category, namely magnitude, has been expanded to include more quantitative and also qualitative semantic properties represented by a variety of vowels. These vocalic-semantic values appear to be consistent with the definition of iconization formulated earlier (the infinitesimally miniaturized mirroring of real-world spatial relations by varying the sizes and shapes of the articulatory chamber). This holds true for several additional categories, which link phonological with semantic attributes, including:

   1. distance/location (*these:those*)
   2. speed/pace (*leap:lope*)
   3. success/accomplishment (*flip:flop*)
   4. ability/skill (*nimble:numb*)
   5. intensity/opposites (*seethe:soothe*)
   6. judgement (*deem:doom*)

This means that although Sapir claimed the pair of vocalic phonemes with the greatest possible divergence, vocalic pairs with lesser divergence appear to be functioning just as well iconically.

5. Strictly adhering to Sapir's approach of scrutinizing merely monosyllabic words whose vowels are constrained within identical consonantal environments has substantially restricted the set of vocabulary analyzed. Hence, we may infer that in future studies, the number of freely chosen words displaying vocalic iconicity is bound to increase greatly.

Carrying this reasoning even further, as soon as consonants are included in the investigation in an analogous manner, the prospects appear indeed promising for identifying an ever-increasing array of iconic phenomena spread over all of English as well as Hungarian and possibly a number of other languages.

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❧

FAMILY TREES IN HISTORICAL LINGUISTICS
AND EVOLUTIONARY BIOLOGY

Robert Orr

THE PURPOSE OF THIS PAPER is to discuss some parallels and divergences between the uses of the family tree for historical linguistics and for evolutionary biology, and point the way to a possible synthesis.

The family tree model has been applied to linguistics and biology for as long as the two disciplines have been in existence, see, e.g., Lockwood (1969:18–21) for a brief discussion of early treatments of Romance and Germanic during the Renaissance and post-Renaissance periods, including descriptions of some early trees. During the first great flowering of linguistics in the nineteenth century, Schleicher drew up one of the earliest family trees for Indo-European (IE), drawing parallels with biology (see Priestly 1975 for a discussion of Schleicher's adaptation of the family tree, also Koerner 1983, 1987 and the references cited therein).

In both fields the family tree model can often distort the true nature of the relationships that it purports to illustrate. Perhaps part of the problem is the family tree model itself: tree diagrams tend to be idealised and oversimplified[1]. As Anttila (1989:300) points out, beginning his own discussion of family trees 'the variation inherent in language is so complex that a complete diasystem represented in a single diagram is impossible, at least for a human reader'. Ross (1997:210) points out that '…linguistic tree[s] express[es] a continuity which is less tidy than the continuity of… biogenetic tree[s]'. Lamb (2004) begins his treatment by saying '…we see [the family tree] model being used quite generally as the basis for genetic classification, even in situations in which it can be applied only with difficulty'. In many instances, in both linguistics and biology, the data on which trees are based are alarmingly incomplete; Dawkins (1988:229) likens the available fossil record overall to 'a cine film with most of the frames missing'[2]. In defence of the family tree for biology, Fortey (2000:128) points out that as we become more familiar with the relevant material the easier it becomes to reduce it to a tree diagram. Much of this material is not new; Alter (1999:70) points out that some of the problems were noted by Thomas Huxley.

1. THE WAVE THEORY. One apparent way of getting round some of these difficulties dates back to 1872, when Johannes Schmidt proposed the so-called wave theory, based on the mapping of isoglosses in western Germany (the so-called 'Rhenish Fan'), according to which linguistic change proceeds like ripples on water (helped along by a stone). The wave theory appears to be best suited to describing developments within closely related groups of dialects, see Anttila (1989:304), Lamb (2004).

Anttila (1989:304–09) includes a detailed discussion of the wave theory, citing previous work synthesising it with the family tree framework. He recalls that scholars as

far back as August Leskien and Karl Brugmann saw the wave theory and family tree as two different, complementary, ways of looking at the same material, with the wave theory showing the geographical aspect and the family tree the historical, or, as Ross (1997:211) puts it: '…linguistic prehistorians do not generally use these two models to interpret the same sets of data. The family tree model is used to map the genealogies of language families… whilst the wave model was conceived to represent details of the internal structure and development of a single dialect continuum'. Most subsequent attempts, or partial attempts, to systematise linguistic relationships cited below may be seen as traceable to one or other, with one possible exception.

In a comprehensive discussion of this and related issues, Lamb (2004) further develops this approach, also pointing out that the wave theory is best applied to groups of closely related dialects, and that '…the various phenomena in Indo-European that may be attributed to the wave theory are survivals from the period when Indo-European was still a group of closely-related dialects'. Anttila (1989:305) provides just such a chart.

2. ENTWISTLE AND MORISON. In a rarely cited, but very apt, metaphor Entwistle and Morison (1964:23) bring up an important point:

> …the separation of the Indo-European peoples [was] like the stretching of elastic. Their contact would be increasingly tenuous, but would hold on until the break came, when they would fly apart with a great interval. So long as the contact was maintained, however thinly, an impulse to change felt in one centre might communicate itself to the others.

In this case the tree metaphor may be apt if we imagine a branch or sapling being bent and then released. Following Ross (1997) and Lamb (2004), Entwistle and Morison's framework might be applied to both the family tree and wave theory, with the family tree being more suitable for depicting situations after a given split, and the wave theory for demonstrating the increasing tensions that lead up to such a split.

Contact may also be lost and then resumed. Townend (2002:41) points out that English and Scandinavian broke contact and then resumed it:

> …there may have been particularly close links between [English and Norse]… This relationship was broken in the fifth century by the events of the Migration Period, and in particular, by the Anglo-Saxon invasion of Britain. Increasing linguistic divergence followed this separation… Thus by the time they came into recontact at the beginning of the Viking Age, speakers of Norse and English had been isolated from one another for approximately two hundred to two hundred and fifty years.

3. SHEVELOV. In the conclusion to his magnum opus on the development of Common Slavic, after dismissing the family tree and the wave theory as inadequate, Shevelov

uses the metaphor of 'clouds in the sky on a stormy day, with their constant changes in shape, their building-up, overlapping, merging, separating, and their ability to vanish in an instant' (1964:607) to illustrate the processes involved in the development of new languages, specifically in this case the dialects and dialect continua that were eventually to give rise to the modern Slavic languages. Dixon and Aikhenvald (2001:5) briefly cite this metaphor, while offering the criticism that '…no criteria are suggested for identifying types of linguistic "cloud", and then plotting and quantifying their movement and interaction'. However, they do not cite Shevelov's later comments on the issue, when, focussing on the development of Ukrainian during the Middle Ages, a period of great upheaval in the history of Eastern Europe, he offers a more detailed application of his 'cloud' framework, although he does not cite it as such. He suggests that the language we now know as Ukrainian crystallised after '…sweeping population movements… now in one, now in another, direction… [accompanied by]… constant peril, disorder, and instability… partition, apparent lack of social ties, and suppressed cultural life… the destruction or decline of cultural centers… the general situation in [Ukraine involved] the decline and often physical destruction of cities and towns, mass refugee movements of the population [in Ukraine], the emigration of a great many intellectuals… to Russia, and the general collapse of the education system' (1979:387, 393).

He also makes a comment illustrating 'overlapping' and 'merging'… 'The texts which we have are broadly open to dialectal, B[ela]r[usian] and partly P[olish] influences, and only by the mid-16th c. did a new rise towards establishing some binding standard make itself tangible' (1979:393).

Like the wave theory, Shevelov's cloud metaphor might be seen as better applying to the evolution of closely related groups of dialects rather than to distinct languages. The facts of the emergence of the three modern East Slavic standard languages lend themselves very well to such an approach, with modern Russian, Ukrainian, and Belarusian traceable back to various mergers and splittings among four originally distinct dialect groups: Galicia/Podolia, Kiev/Polesie, Polock/Rjazan, Novgorod/Suzdal. Indeed, Shevelov's cloud metaphor might have been suggested to him by his decades of detailed work on East Slavic (see Shevelov 1953, 1964, 1979).

It might also be noted that Shevelov is here describing a situation similar to that described by Dawkins (1988), regarding the fossil record, with texts parallel, and playing a broadly similar role to, actual fossils, with their preservation alarmingly subject to the laws of chance, and the need for reconstruction to fill in the gaps.

4. GOULD—PUNCTUATED EQUILIBRIUM. For biology, Gould offers two theoretical frameworks of interest for this topic. Firstly, basing himself mainly on the so-called Cambrian Explosion, he suggests (1991:292–323) that the development of new life forms is often characterised by early explosions of diversity, as exemplified by the oft-cited Burgess Shale fauna, followed by the continuous, large-scale loss of that diversity, sometimes involving the disappearance of entire phyla, mainly through the processes of contingency and chance. He proposes a family tree model based on

the image of a conifer, in contrast to the common image where the family tree implies ever-increasing diversity, with the maximum possible diversity at the bottom of the tree, with constant pruning of branches as we ascend, into ever-decreasing diversity, eventually tapering to a point.

Gould reproduces Ernst Haeckel's early family trees where groups encompassing greater genetic diversity are squeezed into lower tiers (see also Oppenheimer 1987:129–33)[3]. Within the vertebrates, fish are squeezed to the bottom, although fish encompass more diversity than the other vertebrate classes put together. Several examples might be cited for linguistics: Schleicher's IE family tree (1865), cited above, illustrates this problem: Germanic, Slavic and Baltic take up more space than Celtic, Italic, Albanian, Hellenic, and Indo-Iranian. Over a century later, after a vast overall increase in general knowledge of IE, Laponce's tree (1987:55), offers some improvement. This time nearly all the space allotted to Germanic, Celtic, Italic, Indo-Iranian, and Balto-Slavic, with Hellenic, Albanian, Armenian, and Tocharian (without even mentioning Anatolian) bunched together in a tiny slot—despite their much smaller number of speakers, or lack thereof, it might be argued that together they encompass 'phylogenetic' and 'genetic' diversity, and disparity, as great as the five groups to which Laponce does allot some space. Similarly, Anttila (1989:301–02) reproduces Robert Austerlitz's family tree for Uralic, which allots far more space to Baltic Finnic than to Lapp, despite the far greater degree of diversity in the latter.

Gould's approach has come in for some degree of criticism from paleontologists. Fortey (2000:114, passim) argues that most of the problematic animals found in the Burgess Shale, originally even assigned their own phyla, could easily be accommodated into the arthropods (2000:127–28), thus reducing the loss of diversity proposed by Gould, and how many of the others could be grouped with modern velvet worms (2000:131). More serious criticism, however, is offered by Conway Morris (1999:12–14, 138–68, 205–21), who suggests that Gould has failed to distinguish between the fate of individual lineages (which probably would be subject to processes of contingency and chance) and biological properties (which probably would not)[4]. He points out that life forms overall are remarkably similar in design, and argues convincingly in favour of a framework which would allow for a limited degree of contingency, but where in broad outline evolution would proceed along convergent, predictable lines, with predictable endpoints. He goes on to say that 'the basic ecological structure of marine life has not changed radically since the Cambrian. Then as now it is possible to recognise without difficulty such categories as mud-dwellers, strollers, or swimmers. When actual faunas are compared, however, the differences are… profound' (1999:66). What is unpredictable is the exact path taken by any given development, although one could predict that it would hit a relatively limited number of possible endpoints[5]. Such an approach might have implications for family trees in biology—setting up a fixed framework based on a limited number of possible biological properties would simplify the process considerably.

In Orr (1999) I was perhaps too eager to apply Gould's model of diversity to linguistics; perhaps, however, it may actually fit linguistics better than the paleontology

for which it was originally designed, e.g., the linguistic histories of the spread of IE and of Semitic as families, plus, within IE, the development of English, Russian, Italic (Orr 1999:144–48).

Gould is also well known for his theory of 'punctuated equilibrium' (see Eldredge & Gould 1972). According to this theory, which has been subjected to extensive modification and criticism since it was first postulated, biological evolution does not proceed at a gradual, steady rate, but may be characterized as 'stasis punctuated by episodic events of allopatric speciation' (1972:98), which Eldredge and Gould dub 'punctuated equilibria', hence the name.

5. ROSS. Building on the complementary nature of the family tree and the wave theory, Ross (1997:211) discusses a detailed framework which he dubs the 'social network model'. The building blocks of this model are SCE's or 'speech community events', rather than languages or even dialects (subsumed by Ross under 'lects', spoken by 'speech communities'), which allows him to go into considerable detail. He suggests various modifications to the family tree model (1997:213), and makes the point that its emphasis on divergence and lack of attention to convergence has actually distorted the direction of historical linguistic research. He cites data from a wide variety of languages, mostly from the Pacific, and provides about twenty-five figures, illustrating various permutations of what he terms 'differentiation', 'linkage', 'fissure', 'fusion', 'breaking', 'rejoining', etc., thus permitting him to draw various fine distinctions involving degrees of language convergence and divergence, which should be incorporated in any future discussion of family trees.

6. DIXON—THE RISE AND FALL OF LANGUAGES. Based on his readings of Eldredge and Gould (1972), Dixon (1997:28–53) offers a detailed discussion of the problems involved in applying the family tree model to linguistics. A major part of his approach builds on Trubetzkoy's (1939) alleged suggestion that IE may represent a convergence area, rather than the result of splits from a common origin, broadly similar to the situation in the Balkan *Sprachbund*[6]. Dixon actually applies this theory to IE (1997:97–102), and to Uralic. This approach seems to go back as far as Max Müller (see Alter 1999:83). Based mainly on his work on Australian languages, and noting related contributions made by archaeologists such as Peter Bellwood, he goes on to offer an alternative framework involving the concepts of diffusion of linguistic features and punctuated equilibrium, for which he cites Eldredge and Gould (1972). He suggests that the family tree cannot be applied to many language families as well as it can to, e.g., IE, Uralic, Semitic and Algonquian (see also Orr 1999:140, McWhorter 2001:122–23 for further discussion and suggestions for modification). His diagram of how periods of equilibrium and punctuation may be reconstructed is a novel way of looking at possible relationships between Indo-European and Uralic (**Figure 1**, overleaf), and might be applied with profit to other distantly-related families and expanded to include other candidates for membership in Nostratic. Dixon's approach has in turn come in for some criticism from other Australianists (see Alpher & Nash 1999).
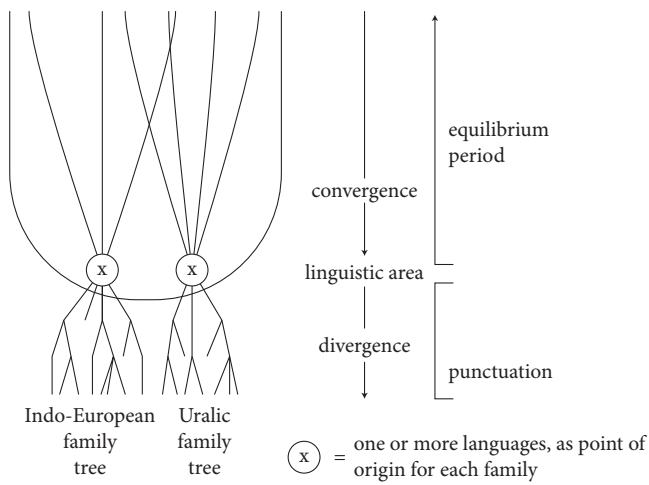
Figure 1. *Convergence diagram⁷.*
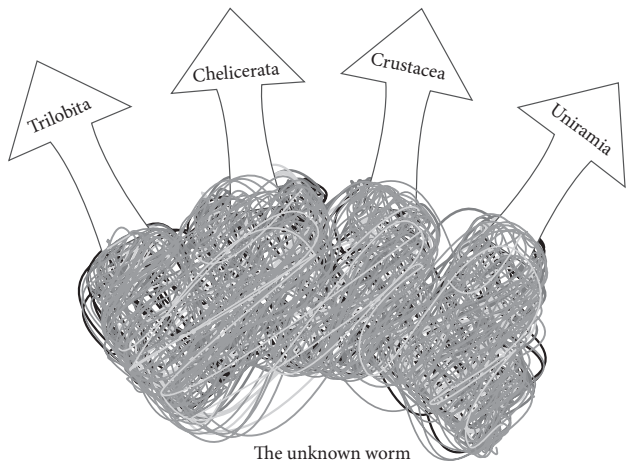
Figure 2. *Convergence diagram.*

For a possible parallel from biology, Conway Morris (1999:171–72) discusses one view of the evolution of arthropods, based on the work of Sidnie Manton, according to which the jointed legs from which the phylum takes its name may be the result of parallel developments within the separate histories of spiders, crustaceans, insects, and trilobites, rather than one development from a single source, and provides a diagram similar in some respects to Dixon's convergence diagram (**Figure 2**).

Lamb (2004) makes a similar point, suggesting terminology taken from Swadesh:

The pure family tree is a theoretical entity, probably never manifested at all in the real world. It would have to reflect a series of sharp splits with no mutual

influence between the separated groups after the splits. What we actually find in the world have been called 'chain relationships' by Morris Swadesh. This term is used here interchangeably with the term 'network'. Neither term is ideal. The term 'chain' suggests a linear structure; to avoid this implication, Swadesh also used the term 'mesh' (1959), which is perhaps even less appealing. The term 'network' provides a possibility for confusion since it is used more often to characterize the structure of a single linguistic system; that kind of network is of course altogether different from the 'family network' of different languages being discussed here.

In contrast, however, Rouse (1992:39) offers a brief description of how linguists construct family trees, and suggests an example which recalls Entwistle and Morison's approach and is conducive to being illustrated by family tree diagrams:

> …the situation among the ancestors of the Tainos is favourable to the establishment of family trees. The ancestral speakers expanded linearly, first along the major rivers of northeastern South America and then along the chain of islands that constitutes the West Indies. As a result, each successive speech community became more and more isolated from those that preceded it, with less and less opportunity for strong interaction with them.

7. WOLPOFF & CASPARI. Citing a very similar metaphor to those above, Wolpoff and Caspari (1997:283), following Moore, suggest that best parallel for the evolution of the human family tree might be that of a river splitting up into channels, recombining, and then splitting up again. They go on to present two possible models of population evolution which parallel those offered by Dixon in his convergence diagram (see also Orr 1999:140, McWhorter 2001:128–29, for proposed modifications).

8. VAN DRIEM. In discussing the groups of languages variously grouped as Sino-Tibetan or Tibeto-Burman, Van Driem (2003:111–12), expanding the tree metaphor in a way startling at first sight, suggests that the metaphor of a patch of leaves on the forest floor might be used to illustrate complex relationships. In a passage too lengthy to quote in full, but worth a close reading, Van Driem goes on to say:

> …The model does not have the shape of a family tree, *but this is not to say that a Stammbaum model is inappropriate. Rather it is a fitting metaphor for the current state of our knowledge…* We cannot lift our heads to look at the tree because we cannot look directly into the past, but in a careful study of the leaves strewn on the forest floor we may be able to discern the shadows of the branches of the tree. At present, we do not know the higher-order branching but we have every reason to believe that these branches are there. This view… confronts scholars with the immediate need to search for and identify the evidence which could support empirically defensible, higher-order subgroups

within Tibeto-Burman, analogous to Italo-Celtic and Balto-Slavic in the Indo-European language family. The metaphor of the patch of fallen leaves on the forest floor leaves us unencumbered[8] (emphasis added).

9. TATTERSALL. An interesting solution, perhaps the best one for our difficulties, was offered by Tattersall (2003:126–27), who hints that the discussion has become too hung up over the issue of terminology. Although his suggestion appears to have been offered in passing, it allows us to subsume all the above analogies, and return to the issues as posed at the start of the paper. Striking just the right note, he provides what may loosely be described as a tree diagram showing the evolution of humans, including extinct species, and genera, and taking recent discoveries into account:

> The *art* on the opposite page is one interpretation of relationships among the various fossil hominid species known to us… the *diagram* is far from definitive…

In linguistics, La Polla (2001:226), following Benedict, provides a similar diagram for Sino-Tibetan, which treats Kachin in detail. Again, he sidesteps the issue of terminology. Perhaps sidestepping the issue of terminology, and just presenting something called a 'diagram' or 'chart' to illustrate relationships, might be best way of dealing with this issue.

10. CONCLUSION. Nearly all the above examples contribute to demonstrating from various angles that although the family tree framework for illustrating linguistic change and the development of new languages is very complex, it is still the best way of doing so, and needs to be refined rather than rejected. Each one of them represents some sort of modification of the family tree framework, with the possible exceptions of the wave theory and Shevelov's cloud framework, and even those may be viewed as complementary to the family tree rather than possible replacements, as per Ross 1997. This paper represents one tentative step towards incorporating them.

One further metaphor from biology that might be considered is provided by bushes which can sprout branches which later can fuse again, or can fuse with branches from other bushes, parallel to Ross's permutations or to Wolpoff and Caspari's river analogy. The branches of fungal mycelia bushes may even be cut and forced together, which might extend the analogy. Including such information, however, would increase the complexity of any family tree even further.

In this context Dawkins (1988:259–60) cites a possible example of how this analogy might work for linguistics, drawing attention to an important difference between linguistics and biology: the fact that animal species never merge or converge, or jump from one branch of a family tree to another (let alone from one tree to another!), whereas different languages often do, citing the development of Scandinavian. The earliest division in Scandinavian is between West (Norwegian, Faroese, Icelandic) and East (Swedish, Danish); the similarities between Swedish and Danish on the one hand and Norwegian on the other are due to later parallel evolution (large-scale loss of morphology, etc.).

The division into Continental and Insular Scandinavian is later (see Haugen 1976:222), or indeed, to put it another way, Continental Scandinavian is the result of later convergence, with Norwegian evolving along the same lines as Swedish and Danish (heavily influenced by the latter; see also Alter 1999:102). The material on resumed contact between English and Scandinavian cited by Townend (2002) might also be cited here, and might be viewed as parallel to the fungal mycelia bushes, as cited above. Taking the history of even such a comparatively well-attested language as English as an example of the difficulties involved, Dixon (1997:45-46) argues that if none of its previous stages had been attested, it would have been very difficult to disentangle all the contributions made to English over and above its West Germanic core by, e.g. Scandinavian and French. 'Different strata seldom have been distinguished, to my knowledge, in any reconstruction of a proto-language (except for Indo-European)' (see also Nettle 1999:3–5, Marcantonio 2002 for extensive citation of material from Uralic[9]). From a close reading of the relevant passages of Dixon (1997), however, he actually seems to be arguing that family tree diagrams should be far more complex than normally presented. Therefore, one modification that might be considered is a much more complex model, analogous to fungal mycelia bushes as described above.

Although the complexity inherent in such a diagram might not be reducible to a page, it would be very useful for illustrating the histories of languages which have been subject to various strong degrees of influence from various languages at various times such as, e.g., English (Scandinavian, French, etc.) or Hungarian (Turkic, Slavic, German), or Ukrainian, as cited above (Shevelov 1979). Linguists may have to discuss family trees in the same way that cartographers discuss Mercator's Projection (even Peter's Projection, which goes some way corrects the distortion inherent in Mercator's may not entirely free of such problems).

As with 'punctuation' and 'equilibrium', 'Catastrophe Theory' (see Orr 1999:136, and the literature cited therein), may also point to another way of synthesising family-tree based and wave theory-based approaches: the cumulative effect of numerous small changes, unimportant when taken in isolation (wave theory), would be to lead to a breaking point, and the emergence of a new system when the old system collapses under the accumulated weight of many small changes (family tree).

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[1]   Paradoxically, the fact that our fragmentary knowledge of the early stages of many languages leads in most cases to oversimplification of our view of the data does enable us to get a glimpse of the big picture. This is a function of the massive amount of material that would have to be included for a complete presentation of the known data in certain instances. The evolution of modern French provides an example—IE, Italic/Latin, Romance, Gallo-Romance, French, with the influence of other Romance dialects plus Germanic on French. Aikhenvald and Dixon touch on this issue, asking rhetorically 'were there family trees upon family trees?' (2001:9), which would considerably increase the complexity.

[2]   Although it might be noted, paradoxically, that the very paucity of the material allows us to concentrate on the big picture, and to produce rough outlines—to adapt a metaphor, we are forced to keep our eyes on the overall wood, because there are so few trees.

3   The same tree shows a similar perspective within the mammals: the relatively homogenous primates are given far more space than rodents, the most genetically diverse of all mammal groups.

4   Conway Morris' distinction between *diversity* and *disparity* for biology is parallelled by Nichols' (1992:22–23) postulation of *two* types of diversity for linguistics: *genetic* and *structural*.

5   Conway Morris (1999:202) cites the following theoretical example: 'while… the evolution of the whales, is… no more likely than hundreds of other end points, the evolution of some sort of fast, ocean-going animal that sieves sea-water for food is probably very likely, and perhaps almost inevitable'.

    One specific example is provided by Diamond (1987), Quammen (1996:167–68), who suggest that the Komodo Dragon originally evolved as a predator on a small island, probably free of any potential mammalian competitors, to feed on pygmy elephants, which have since become extinct. The point here is that the evolution and emergence of large carnivores is to be expected in all environments; they are a vital part of most ecosystems: but such large carnivores do not *have* to be mammals, although that would be expected in the present era. Bakker (1988:80–81, 85) points out that in the modern mammal-dominated world we live in it is only under exceptional circumstances that a reptile, even one such as a Komodo Dragon, could occupy the position of top carnivore in an ecosystem. Nevertheless, the point is illustrated: the biological property of top carnivore is constant, even though it is not always filled by the same type of animal.

6   It should be pointed out, however, that while there may have been some instances of convergence in the histories of the individual IE languages or language families, the emergence of IE itself cannot be seen as the result of convergence, see Rasmussen 1999 (1991), who also notes (1999:467–68 fn.) that there is evidence to suggest that Trubetzkoy originally published the theory of IE arising from convergence in jest.

7   See Orr (1999:140) for further comments, and a 'modified convergence diagram'.

8   In a similar vein, in treating remote relationships, in an oral presentation (Orr 1983) I suggested that another way to view them was the analogy of mountains covered in low cloud. This metaphor was suggested by the location (Banff, in the Canadian Rockies) and the weather conditions (mine was the first presentation of the morning and the clouds were very low obscuring the mountains, although their general outline was clear).

9   Marcantonio (2002:277–78) concludes by suggesting that non-linguistic factors may also have contributed to the maintenance of the traditional Uralic paradigm: '…the emotional search by people for their origins, political influences in Eastern Europe, the process of peer-review in the context of a powerful paradigm, and the straitjacket of the adopted Darwinian model'.

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VISUAL INFORMATION-SEEKING BEHAVIOR OF CHINESE- AND ENGLISH-SPEAKING CHILDREN

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EVIDENCE FROM CROSS-CULTURAL STUDIES shows that children soak up culturally specific graphical knowledge from their communities. Recent cross-linguistic studies suggest that they develop some language-specific behaviors that are reflected in non-linguistic cognitive skills. It may follow that children also absorb visual information-seeking behaviors from their cultural/linguistic communities. Studies carried out by Lucy and Gaskins (2001, 2003), Levinson (2003), and Bowerman and Choi (2003) provide evidence that adults and children exhibit the influence of language specific diversity on visually prompted, non-linguistic cognitive tasks. The recent comparative research of Lucy and Gaskins (2003:479–81) with Yucatec speakers and American English speakers has investigated number-marking patterns in several contexts and across ages. Their results show that the nonverbal cognitive responses of adults as well as 9-year-old children agree where the languages agree and differ where the languages differ. Several of Levinson's studies related to linguistic relativity in the spatial domain suggest that certain concepts embedded in a language are reflected in every aspect of the language community—the way doors open, the spatial arrangement of objects, the nature of gestures (2003:43). He argues that toddlers are informed continuously through thousands of details of their built environment and by the way people around them conduct interactions. Bowerman and Choi (2003:398–411) in their work with Korean speakers and English speakers, using a preferential looking study, found that children as young as 18 months in the early linguistic stage adopt language-specific principles of categorization, but that infants in the prelinguistic stage are much less sensitive to such categories.

Building on such findings and his own theory of neurocognitive language development, Lamb (2000:186) asks how visual input is associated with perception, thought and language. He points out that because children's visual intake is so overwhelmed by the flux of environmental information, they must learn to select which features to attend to and which to ignore. He hypothesizes that this selection process is largely guided by the language of members of the children's community.

In this paper I report on a study conducted in China and the United States that investigates how children in their early years seek information visually in naturally occurring situations. The working hypothesis is that although individuals in all cultures exhibit great variation in behavior, children exhibit clusters of nonverbally expressed attributes of visual information-seeking behavior that are associated with their specific cultural/linguistic community. Although this study does not directly

address the interplay between language-specific behavior and non-linguistic cognitive skills, it may provide clues about it.

1. HISTORY OF THE RESEARCH. For the last 20 years I have been investigating culturally embedded repertoires of practice in China and the United States that are related to visual processing. These lay the foundation for the current study and point toward a possible proclivity for culturally or linguistically associated perceptual development in children. These studies, in turn, are rooted in Regan's extensive investigations into the nonverbal and specifically into the visual semiotic of Chinese culture (e.g. Regan, Stephenson & Pine 2000, Regan & Hong 1984, Regan, Zhou & Hong 1987), including adults and children attending to and remembering two-dimensional detail and prelinguistic communication studies among Chinese- and English-speaking toddlers. Both the Regan studies and my research are based in part on the recognition that the structures of Chinese[1] and English are distinctly different in a number of areas. However, our focus on the nonverbal and the behaviors related to the development and use of a visually complex written system has left untouched the close comparative linguistic analysis that may be helpful to pursue in light of the Lucy, Levinson and Bowerman studies.

1.1. PREWRITING STUDY. My first study relates to the question of whether children exhibit clusters of culturally similar attributes (Pine 1992, 1993). It asks whether the 'prewriting' of 2- and 3-year-old children in China and the United States included characteristics associated with the writing system of their respective speech communities. Seventy-five children in each country were asked to 'write a letter just like their parents or grandparents do'. **Figure 1** shows typical samples of their prewriting. The 150 samples were analyzed for 3 interval-ratio variables (number of configurations, size of the configurations, and amount of paper used) and for the presence or absence of 30 attributes that had been identified in the adult English and Chinese writing.

The 2- and 3-year old children exhibited a considerable amount of graphical knowledge that revealed culturally clustered patterns that had not been explicitly taught to them. The three interval-ratio variables showed the differences between the Chinese prewriting and the U.S. prewriting to be significant at the p=.0001 level. The presence or absence of the 30 attribute variables predicted country of origin correctly for the Chinese sample 88% of the time and for the U.S. sample, 92% of the time. The most heavily weighted marker variables were short line segments that included angles, hooks or curves and long curving or looping lines. The Chinese children made very small configurations, the U.S. children much larger ones; the Chinese children used many short lines and angles that filled little space; the U.S. children tended to use long, continuous curving or back and forth lines that filled the paper.

1.2. NOTICING BEHAVIORS IN EVERYDAY LIFE. Working with Regan and Chinese colleagues we ran series of tests to explore visual acuity both in China and the United States—the identification of one complex geometric shape from the next; finding the

Chinese: 2 years, 11 months

U.S.: 2 years, 11 months

Chinese: 3 years, 5 months

U.S.: 3 years, 5 months
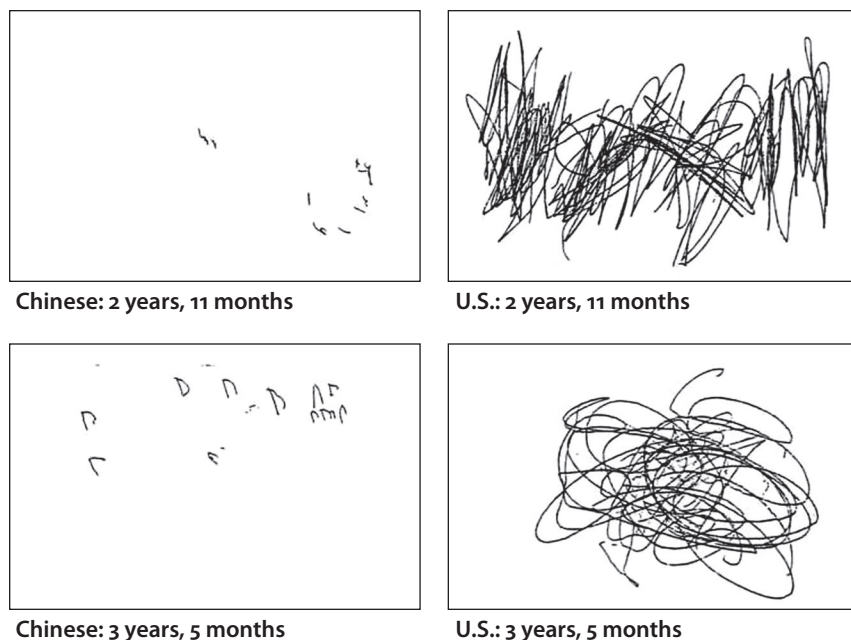
Figure 1. *Typical U.S. and Chinese prewriting. Original papers were 5.5 x 8 inches.*

one mistake in a row of identical characters; the ability to copy unknown characters, words and geometric patterns; and the facility to reproduce complex characters and English words from memory after a 10-second look. The results of these tests highlighted a presence among the Chinese children and adults of an attention to detail and a highly accurate visual memory for two-dimensional figures when compared to native English-speaking children and adults. One study, for example, showed Chinese first graders much more skilled at copying unknown complex characters, English words, and abstract figures than their native English counterparts (Stephenson 1994). Almost all of the studies, however, pertained to understanding culturally specific clusters of behavior surrounding two-dimensional shapes. Our results suggested a need to explore more complex phenomena.

1.3. REMEMBERING AND DECODING. Two Chinese colleagues and I (Pine, Huang & Huang 2003) carried out studies of the literacy practices and strategies that primary school children in China report using to remember and decode the densely packed characters of their writing system. In the last of these studies, using single character words with small errors in them to stimulate children's oral commentary, we interviewed thirty first, second and third grade Chinese children about the strategies they used to remember and decode characters. The results were clearly different from what has been found in the United States. A typical response from a Chinese first grader went like this:

Interviewer:	Is [the character] right or not?
Child:	No.
Interviewer:	How do you know that?
Child:	Because the end part of it shouldn't be this horizontal bar, but four dots.

Each response was analyzed in relation to the final ten categories that were developed using a constant comparative method (Glaser & Strauss, 1967:156). The children employed remembering strategies that overwhelmingly utilized what we defined as 'structural analysis'. They separated the structure of the character into explicit parts, associated the character or part of it with another known character or small units of another character, and scanned for details and particular strokes. At all three grade levels, they clearly reported turning toward visual segmentation and their visual knowledge of characters and character parts to decode and remember characters. A second grade child, for example, talking about how she remembered the character *yàn* (燕) [swallow], divided it into multiple parts:

I divide it into several parts. The bottom part is four points; the middle part is a *kǒu* (口) [mouth] and a separated *běi* (北) [north]; the upper part is a *cǎo* (艹) [a component meaning *grass*] and a dash. [Hand motions accompany all 3 parts—upper, middle, lower.]

1.4. PRELIMINARY LOOKING-BEHAVIOR STUDIES. In the process of completing the literacy study, I returned to an earlier study I had begun on looking behavior. That study probed naturally-occurring looking events across ages in both China and the United States as they were noticed by cultural outsiders. For example, we from the U.S. noticed that a Chinese adult asking a toddler to perform a visual task would gently push the child's head, tilting it farther forward over the task than it had been. The adults explained this action as giving the children assurance. Chinese colleagues observed that U.S. parents at such places as the zoo or a museum were unusually casual about pointing out what children should be noticing. The U.S. adults explained that their general pointing or comments were sufficient for a family outing.

In observing Chinese and U.S. adult/child interactions I found several differences, with one clearly delineated. Of 77 Chinese adults observed holding babies and young children, 74 held them in an almost identical position with the child's head at eye level with the adult's eyes (**Figure 2**). Of the 75 American adults observed holding children, there was no such consistency. Instead, 10 distinct U.S. holding positions emerged, varying from high on the hip with the child looking in a number of directions to flat against the body with the head covered (Pine 1997a:9).

Other portions of this study systematically recorded observations of children ages 1 to 4 years in China and the U.S. in naturally occurring situations in homes and public places. Although many of these children were probably native speakers of Chinese or English, this information was not recorded. Data were collected primarily by

Figure 2. *Adult indicating behavior: carrying positions in China. Traced from representative photos taken in China, ages 6 months to 3 years (Pine 1997b:519).*

participant observers trained to estimate time and child ages accurately. Some were videotaped. Six coding categories such as the size of the object of focus emerged from this study and became a base for the current study.

2. THE CURRENT STUDY: ANALYSIS AND FINDINGS. The current study carries the previous looking-behavior study to a new level[2]. Focusing on 2- and 3-year-old children in China and the United States, I have investigated visual information-seeking behavior in more detail across twice as many categories, taking advantage of digitized video-recording which allows for finer grained analysis than analogue. In China the sample was limited to those acquiring Chinese (Pǔtōnghuà) as their first language, in the U.S., to those acquiring English as their first language. Forty events selected from the digitized tapes were analyzed by separate categories. The data for the object of focus category were drawn from both the preliminary study and this one. The 40 events, 20 from each country, were selected from over 75 events in each linguistic community, controlling for a comparable number of preschool, home and public venue contexts as well as age differences.

Visual information-seeking behavior of young children includes such naturally occurring activities as looking at and poking a bit of dirt; looking at a small bug for a concentrated time; watching colorful balls fall through an irregular structure; watching animals at the zoo or water toys as they use them or looking at the world through a sieve. It might also be watching a teacher demonstrate a lesson or a grandfather demonstrating how to blow bubbles. An *event* of visual information-seeking behavior is a time span during which a child focuses on one thing, to investigate it, observe it, or interact with it. The primary mode of interaction is visual, even though other modes are involved. An event ends when a child changes to a different activity, is out of view of the camera, or when the video has been following the child for 15 minutes.

Child's primary focus	Materials used
• size of the object of focus	**Adult involvement**
• distance from eye to the object*	**Adult/Child agendas**
• movement of the object	**Adult/Child interaction**
• nature of child's focus (visually	• adult orients child
locked, steady, jerky, etc.)	• adult simplifies task
Body movement	• child seeks adult assistance
• speed/amount of movement*	**Duration of looking**
• what portion of body is moving*	• number of sub-events (focus
• area child uses	changes)
• hand movement	• average length of focus

Table 1. *Current coding categories for visual information-seeking behavior. *Those with stars were added by Chinese colleagues, among them a linguist.*

2.1. CATEGORIES. Categories were derived from the previous looking behavior study, from studies by Rogoff et al. (1993:1-57), from Chinese colleagues, and from data analysis (**Table 1**). Several categories that emerged from the data appear to be potential markers of culturally clustered patterns associated with visual information-seeking behavior.

2.1.1. SIZE OF THE OBJECT OF FOCUS. This category emerged from the earlier looking-behavior study and has held steady ever since (**Figure 3**). Objects in the different size categories include such items as the following:

0-1":   **Both countries**: ants, dirt particles, grain kernels
          China: some school manipulatives (e.g. linking toys; puzzle pieces; paint-covered tissue paper balls, about .25" to .33" dia.)
1"–6":   **Both countries**: Legos for toddlers
          China: pots and pans for playing, blocks
          U.S.: beads for stringing, cars, geometric pattern shapes
6"–1':   **China**: some blocks, a balloon, a Lego Ferris wheel
          U.S.: blocks, pots and pans for playing, toy computer

The Chinese speakers focused on smaller objects, the English speakers on larger. Focusing on objects of 1 inch or less was especially unusual for the U.S. children. While 22 cases were found among the Chinese speakers, only 3 cases occurred during the English speakers' events. Although more English-speaking cases fell into the next category, 1"–6", there were still almost twice as many Chinese cases. Alternatively, fewer Chinese-speaking children focused on objects as the object size increased, with the exception of the 4' to 10' category, which consisted primarily of zoo animals. Note that preschool materials were another environmental influence since in both countries
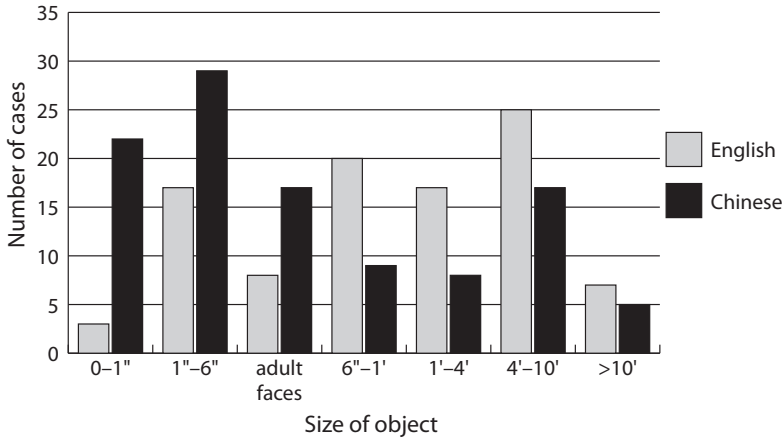
Figure 3. *Size of the object of focus for 2- and 3-year-old children. English speakers: n = 37, number of events = 92. Chinese speakers: n = 44, number of events = 99.*

many of them are between 1 and 6 inches. Of the 17 U.S. cases in that category, 12 involved preschool materials.

2.1.2. DISTANCE FROM EYE TO OBJECT. Chinese collaborators introduced this category and made sure it was kept. Their insistence was reinforced by a poem I heard recited in a first grade classroom recently. As the reading comprehension lesson ended, the teacher prepared the children for a lesson in writing characters. She added, 'but first of all, tell me the principles for writing'. In unison the children recited the following poem, which rhymes in Chinese:

> *The body is one fist's length from the table.*
> *The eyes are 0.3 meters from the paper.*
> *The fingers are 0.033 meters from the tip of the pencil.*
> *Good eyesight is important to us all.*

The 40 events in this category did not yield clear results. This is partially due to the substantially different contexts selected for videotaping in the two countries. On-going data collection with a Chinese colleague is working toward more standardized, yet naturally-occurring contexts.

2.1.3. DIAMETER OF AREA USED. Two categories related to body movement have yielded interesting results—the diameter of the area used by the child while engaged in a looking event, and the speed of the child's body movement during an event. The Chinese children almost always stayed within a 0 to 2' diameter, even though in every analyzed event there was ample space available for more movement and the children were not physically constrained. In only 3 of the 20 Chinese events did the child use
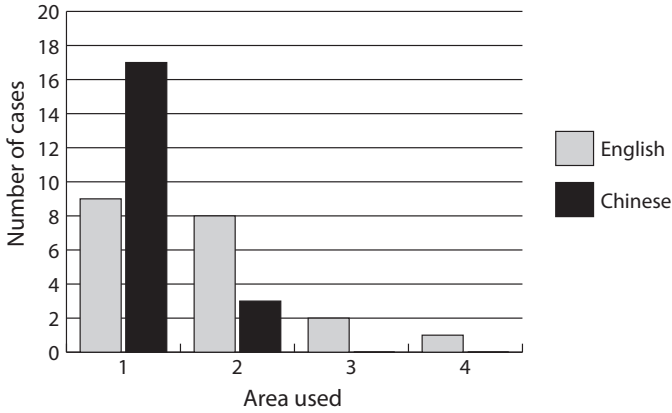
Figure 4. *Diameter of area used by child. Rated from 1 to 4 (1 = 0–2 ft., 2 = 2–6 ft., 3 = 6–10 ft., 4 = > 10 ft.).*
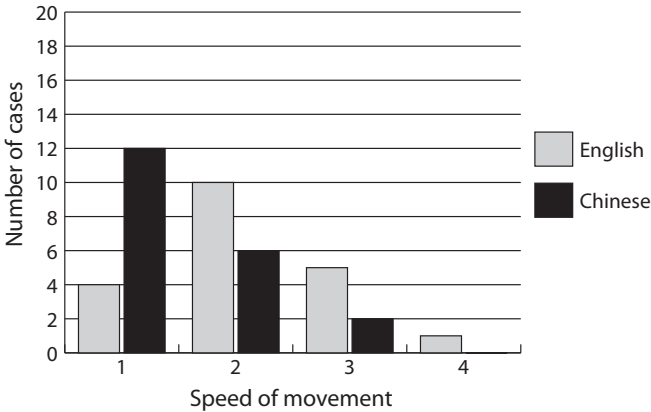
Figure 5. *Speed of children's movement while engaged in a visual information-seeking behavior event. 1 = still, very slow; 4 = moving quickly (e.g., jumping up and down or moving shakers very fast while looking at them).*

more space than this (**Figure 4**). The English-speaking children, on the other hand, used a much larger area. The amount of space available for movement was similar in both the Chinese and the U.S. contexts.

2.1.4. SPEED OF CHILDREN'S MOVEMENT. The speed of movement category (**Figure 5**) rated a child's total body movement during a looking event on a progressive scale of 1 to 4, with 1 being still or very slow. Although not quite as differentiated as the Diameter of Area Used category, a clear difference exists between the movement speeds of the English speakers and the Chinese speakers. The Chinese speakers were more

likely to be still, often moving only their hands. Twelve of the 20 Chinese speakers were rated at 1, still or very slow, while only 4 of the 20 English speakers were rated at this level. Six English speakers were rated at a 3 or 4, while only 2 Chinese speakers were rated at 3 and none at 4. These findings are augmented by adult comments made while viewing videotapes of the other culture's children. The U.S. adults often described the Chinese children as 'calm' or 'still', whereas Chinese adults tended to describe U.S. children as 'very active' and, often, engaging in 'dangerous' activity.

2.1.5. THE REMAINING CATEGORIES. A number of categories remain to be analyzed, with several posing complicated analytical issues and others requiring more standardized data collection. One category that has created analytical problems is the number of sub-events found within an event. A sub-event is a length of time within an event during which a child focuses on one thing. The next sub-event occurs when a child changes eye focus, and within each event there are many sub-events. Although the primary object of focus is maintained throughout the event, the child often looks elsewhere—at someone walking by, at something dropped, at an additional utensil that could be useful. In the current data sub-events range from 50 seconds to 7 minutes and raise many questions about when a child actually changes focus. Another problematic area is video-recording naturally occurring behaviors in home environments with adults present. Many of the earlier recordings found parents trying to force a child to do a particular activity rather than allowing more natural behaviors to unfold.

3. DISCUSSION. My study suggests, within the considerable limits of the data analysis, that 2- and 3-year-old children whose primary language is Chinese or English have developed different forms of visual information-seeking behaviors. Whether these differences are associated with the structure of their primary languages has not been investigated in this study. However, it could be useful to ask whether these predominately nonverbal data mirror in any way sets of differences that exist in the language structures.

Within the context of questions about how language may influence nonlinguistic cognition, Bowerman and Choi, Levinson, and Lamb all grapple with the linguistic and cognitive development of young children as they come to linguistic fluency. Do concepts such as spatial perception arise in children in the early linguistic stages through a combination of nonlinguistic cognitive development and linguistic guidance? Is linguistic interaction a driving force or are the structures of language infused throughout their cultural environment? Bowerman and Choi (2003:387) argue that research with very young children is valuable as a means for uncovering how flexible—and thus potentially malleable—is their cognitive structuring of the physical and social world.

Lamb and Levinson both describe compelling scenarios about how children might develop perceptual concepts. Lamb (2000:186), in addressing how a concept is learned by children in the initial stages while they are surrounded by a barrage of input, suggests that their early learning must involve a selection process. He hypothesizes that

in the interconnection of linguistic and additional input, children easily learn 'to discriminate myriad visual and other perceptual properties' guided by members of their linguistic/cultural community. Levinson (2003:43) stresses that the details of the world in which the children interact 'will inform the discerning toddler again and again till she gets the message'.

Many questions arise as to whether the predominately nonverbal, visual information-seeking data presented here can provide clues about the early stages of linguistic development and its relation to the children's language community. Two of the most compelling are the relation of the nonverbal to early language development, and the importance of movement for the two groups.

3.1. POWER OF THE NON-VERBAL. Although this study does not directly address the association of children's visual information-seeking behavior with structural elements of Chinese and English, it opens the question of whether linguistic influences might be associated with early nonverbal variation in looking behavior and what the association might be between their verbal and nonverbal development. Watching the nonverbal interactions of 2- and 3-year-old children second by second on the digitized videos has led me to believe that their nonverbal sign systems are considerably more developed than their verbal. There is a tendency in the U.S., and I believe in China, to focus on their verbal development and in so doing judge them as less developed than they are. At 2 years and early 3's they seem to be getting their 'cultural movements right' in the nonverbal, whereas their language development is much less sophisticated. For example, one video captures the motions of Chinese 3-year olds pretending to cook at their preschool kitchen center. They use a myriad of complex nonverbal interactions: picking up little bits of 'food' from a table and putting them in several bowls, transferring the food bits from one bowl to the next and into a pot, then placing other 'food' from the pot into another bowl and stirring, all in an intricate ballet of preparing food the Chinese way. Although the children talk a little to each other, or to themselves, the complexity lies in their hand movements, not their words. And often they say nothing. Equivalent scenarios occur in the U.S. videos, from cleaning up kitchens to examining lawnmower mechanisms and 'fixing' them to caring for babies. While recognizing that the verbal and nonverbal are knit together, these complex interactions may raise the question as to whether nonverbal behaviors are the leading edge of linguistic development within a continuous feedback loop.

3.2. MOVEMENT. A cluster of questions relates to movement. The questions appear to be important, yet the perceptual concepts embedded in movement are difficult to grasp. In addition movement raises many analytical and interpretive puzzles. U.S. children appear to be fascinated by motion. For instance, in many U.S. videos toddlers in a preschool play-yard watch sand being poured from a teacher's shovel or sifted through a sieve for long blocks of time. They exhibit great enthusiasm for running around looking through their own sieves, seeming to be enchanted by the moving, fractured view of their surroundings. Parents often jiggle something to get children to

look at it or bounce their children up and down to entertain them. Movement is also involved in what Chinese children look at, but the nature of that movement appears to be different and less dominant. This difference is probably a matter of degree, but it also seems to be quite important to the English speakers and not as important to the Chinese speakers.

How to code moving objects and their focus on them is especially confounding. This is evident in defining sub-events, but also in many other areas. If a child is continuously stacking up geometric shapes from the same toy, one after the other, is this one sub-event or many? What is the object of focus of the child running around looking at the world through a sieve? Such murky areas have not been included in the present analysis, yet they make up a portion of the data that may be very valuable.

Levinson suggests that children's nonverbal behavior patterns—in our case, visual information seeking behavior—may be a capturable reflection of particular language characteristics. Whether my research provides clues about the interplay between language-specific behavior and nonlinguistic cognitive skills is still a distant, if tantalizing question. However, as Levinson (2003:43) suggests, the clues to how we think 'are not all in the language but are distributed throughout the context of language learning…' They are in minute-to-minute interactions and the cultural environment. He hypothesizes that this is true '*because* we think in line with how we speak'. If this concept is accurate, then the current study may provide hints about the cognitive impact of Chinese and English on the nonverbal behavior of the children described here. It may be that this study reflects some of that distribution in Chinese and English.

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1   I am using the term 'Chinese' to refer to Pǔtōnghuà, the official school language of the People's Republic of China. In many Western communities it is called Mandarin.

2   I want to express my appreciation to all of my Chinese colleagues who have provided insights about this research, with particular thanks to Qiu Wei and her family, Zhang Yafei, and Yu Zhenyou who have brought their expertise and patience to the data collection and preliminary analyses.

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POCS & CLICHÉS & ODDBALL CONSTRUCTIONS, OH MY!

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IN THIS PAPER I am looking at constructions that tend to be ignored by mainstream linguists. The phenomena are well known but ignored because they do not fit into the mold of rule-governed building of larger structures from smaller units. At the level of syntax, we tend to think of the basic units as morphemes or words and the rules as building phrases, clauses, and sentences out of the morphemes or words. We tend to emphasize our ability to create sentences that were never uttered before, or at least that we never heard before.

This emphasis leads us to the expectation that everything we say and write will be unique. Each sentence and group of sentences will differ from anything that anybody else in the English-speaking world has said before. The flip side of this ability to create sentences anew is the ability to remember large units of text. At the extreme, actors can remember their parts in entire plays, and we can memorize poems, song lyrics, and other material, such as the Pledge of Allegiance.

From time to time some linguists have speculated about the possibility that we may not in fact operate with built-in rules. Instead, the possibility has been raised that we remember whole clause or even sentence units, and we create our utterances by taking these previously heard utterances and substituting vocabulary. I have heard both Charles Hockett and Sydney Lamb mention this possibility at previous LACUS meetings. I will refer to this as a top-down generation, as opposed to a bottom-up generation, starting with words and working up to clauses and sentences.

As a result of teaching my large enrollment classes in English Grammar, I have found myself surfing the Web using Google to search for actual examples of English, as opposed to the made-up sentences we lazy linguists tend to use. What I have found suggests that top-down generation is far more prevalent than at least I had heretofore suspected. I do not deny that we generate in a bottom-up manner, but I now feel that not to take into account top-down generation is to miss an important part of language.

Google not only allows one to search the Net for information, but it also provides an estimate of the number of occurrences of particular words or phrases. For those who are relatively inexperienced Googlers, I will point out five of Google's lesser-known features. The first is that Google will search for an exact expression longer than a word if that expression is placed in quotes. The second is that within such a quote one can indicate 'any word' by typing in an asterisk where the arbitrary word must be. Any two consecutive words can be indicated by two asterisks, and so on. The third is that one can search for text that excludes a word by typing it preceded by a hyphen. The fourth is that one can search for text from specific countries by limiting

the search to a domain that is only used in that country. For example, the domain name '.ca' is used exclusively in Canada, while '.net' is used almost exclusively in the U.S., and '.uk' is used exclusively in Britain. On the other hand, '.com' is used across many countries. And, finally, the fifth is that one can introduce 'or' into a Google logical expression using the vertical line ('|').

The major advantages of Google are (1) that it is easily used and universally accessible, and (2) it operates over the largest and least controlled database in the world. The major disadvantages to using Google rather than any of the available tools specifically designed for linguistic analysis are (1) that it is an unedited database, including material from non-native speakers and speakers from many different dialects of English, and (2) that it ignores punctuation, so that searched-for expressions may not be true expressions, but two separate expressions, the first part at the end of one clause and the second part at the beginning of another clause.

Google can be a very useful tool for teaching and studying grammar. For example, linguists talk about three tenses (past, present, and future), four aspects (none, progressive, perfect, and perfect progressive), and two voices (active and passive). This predicts 24 different combinations, including the future perfect progressive passive: *will have been being* VERB-*ed.* A recent check of Google found 143 English language websites containing *will have been being.* Almost all of the 143 sites are English grammar sites, plus a few actual examples of the future perfect progressive used on the verb to be, such as this from Ireland: *This service, which will serve none of the stops any of you want to get off at, will be a standing only service as it* **will have been being** *the only train to arrive at this station for forty minutes.*

I have found only a very few actual examples, almost all of them from abroad. One comes from Singapore: *The comment, made while discussing television programming for the August 9 Singapore National Day celebrations, referred to traditional Singaporean children's programs as "Transformers: The Movie," "The Land Before Time," "An American Tale," and "The Nutcracker Suite" and said by the time he expected to finish some picture-taking "**they will have been being shown** all afternoon."*

Another, this one from the U.K.: *The data* **will have been being checked** *by schools as part of the performance tables exercise.*

One from the western U.S.: *Old combine wanted. Looking for an Allis Chalmers Model 60 All Crop Harvester or equivalent in good state of repair. Tractor pull with all screens and the motor.* **Will have been being stored** *in a barn and come with original manual. Make offer.*

Using such information gleaned from Google, we can reply to students who doubt that such a tense-aspect-voice combination exists, that it is highly likely that they have not, in fact, heard such combination before, but it does seem to occur extremely rarely. One must keep in mind that while this construction occurs a mere handful of times, *ain't* occurs 3.73 million times!

Having hopefully convinced you that Google is a useful tool for studying grammar, let us now turn to clichés. We all recognize that certain expressions occur often in speech and writing. There are dictionaries entirely devoted to clichés. I find it useful to

sort clichés into several categories: metaphors and similes, catchphrases, idioms, collocations, and what I refer to as POCs, which is short for Preferred Order Combinations.

Individual lexical items can differ systematically based on their use in a clause. This systematic variation is inflection. Nouns vary as to number, and sometimes case and gender; verbs vary as to tense and in some languages many other factors. Nevertheless, we consider words to vary very little. The same can be said of idioms, which are simply lexical items containing more than one word. To what extent is there variation in larger units? I will consider this issue from two perspectives—namely, that there is less variation than one might expect, as evidenced by the existence of POCs, and that there is more variation than one might expect, as evidenced by elaboration of clichés.

1. POCS. First I will look at what I call POCs. Preferred Order Combinations are (usually) two or more words connected by a coordinating conjunction, usually *and.* They are in preferred order if one of the two possible orders predominates; that is, one of the two words is in first position far more than the other. I will consider a combination to be a POC if three conditions are satisfied: (1) one order occurs at least twice as often as the other, (2) if one order registers at least 10,000 occurrences, and (3) if the unit is not an idiom. The second condition excludes combinations which never or hardly ever occur, such as *window and Christianity.* The third excludes units which have a specific meaning distinct from the combination of the meanings of the two separate lexical items. Such units usually rate a separate entry or subentry in a desk-sized dictionary such as the Merriam-Webster Collegiate or the American Heritage Dictionary. Some examples of combinations that are idioms are: *rock 'n' roll, black and blue, odds and ends, flesh and blood, touch and go,* and *by hook or by crook.*

The following are examples of what would be considered real POCs: *dead or alive, hands and feet, right and wrong, tall and thin,* and *yes or no.*

Such constructions have been known about all along. They have been referred to by various names, such as 'fixed order coordinates' (Abraham 1950), 'frozen word order' constructions, or 'freezes' (Pinker *&* Birdsong 1979), and 'irreversible binomials' (Malkiel 1959). Since, as we shall see, they are not completely fixed, frozen, or irreversible, I use the term Preferred Order Combinations, or POCs for short.

Linguists have studied these constructions in order to determine what rule or rules would predict the order in which these combinations occur. Both phonological and semantic rules have been proposed.

Jespersen (1905:233) cited Panini's 4th century B.C. observation that there was a rhythm rule which caused the shorter of the two words to be in first position. (A similar observation was made by Behaghel 1909.) This could explain our preference for such combinations as *bread and butter, cup and saucer, dark and dreary, high and mighty,* and *free and easy.*

This hypothesis was weakened when Scott (1913) found that of the 276 combinations he looked at, a good 42% were in reverse order, including such combinations as *butter and eggs, hammer and tongs, profit and loss,* and *summer and fall.*

In any case, syllable form cannot explain combinations where the number of syllables is identical, such as *push and pull, yes or no, over and above, heart and soul, ham and eggs, tall and thin,* and *sooner or later.*

Morawski (1927) made another attempt at a phonological form rule—namely, that, at least in Spanish, the nature of the first sound was relevant—voiceless preceding voiced, for example. However, he couldn't explain all the Spanish combinations with such an analysis. Others have suggested a preference order for different vowels.

Many have postulated that there are semantic rules that determine the order. If so, the rules are not the same in different languages. Such expressions as *black and white, back and forth, cat and dog, cat and mouse, comb and brush, cops and robbers, dead or alive, hot and cold, hugs and kisses, needle and thread,* and many, many others are expressed in the reverse order in Spanish. Similarly, other combinations are expressed in reverse order in German, French, Italian and/or Latin (Abraham 1950).

Nevertheless, a large number of semantic rules have been proposed (e.g. Abraham 1950; Malkiel 1959). These include:

(1)   'Desirable precedes less desirable', as in *better or worse, friend or foe, good and bad, hit or miss, rich and poor* and *right and wrong.*
(2)   'More important precedes less important', as in *captain and crew, teacher and pupil, work and play,* and *God and country.*
(3)   'Masculine precedes feminine', as in *men and women, masculine and feminine, king and queen, husband and wife,* and *Mr. and Mrs.*
(4)   'Earlier precedes later', as in *before and after, then and now, past, present and future, search and destroy, life and death,* and *signed, sealed and delivered*
(5)   'Close precedes far', as in *here and there, near and far, home and school*
(6)   'Higher up precedes lower down' as in *hat and coat, arms and legs, fingers and toes, head and shoulders.*
(7)   'Front precedes back', as in *front and back, fore and aft, stem to stern*
(8)   'Large precedes small', as in *dollars and cents, feet and inches, chapter and verse.*
(9)   'Technical progress', as in *radio and television,* and *by land, by sea, and in the air.*

The rules go on and on; each linguist comes up with new rules or a different set of rules.

However, such rules merely express tendencies: *rain or shine, war and peace, sink or swim,* and *in sickness and in health* violate the 'desirable first' rule; one can argue that *neat and clean* and *body and soul* violate the 'more important first' rule, *ladies and gentlemen, bride and groom,* and *mother and father* violate the 'masculine first' rule, *day and age* violates the 'larger first' rule, and *back and forth* and probably *kiss and make up* violate the 'earlier first' rule.

Of course, if there are many rules, more than one may apply to a particular expression, and the rules often suggest opposite orders of occurrence. Sullivan et al. (1995)

here at LACUS and others have attempted analyses of idioms based on notions that different rules have different strengths, or that the rules have a precedence order. In all cases, the linguists reported that their proposed strengths or orderings are preliminary, as there still remained many exceptions.

Makkai (1972:157–64) is less concerned with which item of a conjunctive expression is first than he is with degree of reversibility. He proposed three categories. First, there are some binomials that are truly irreversible, as in *spic and span* and *kith and kin.* A second category consists of binomials that are reversible, but 'lose institutionality' when uttered in reverse order; an example he gives is *salt and pepper.* And the third category involves binomials that do not change character when reversed; an example is *night and day* and *day and night.*

As I read through the proposed rules for ordering constituents, I found myself getting more and more skeptical over the proposals. After all, if there are dozens of rules, often making contradictory proposals as to which element should go first with some rules apparently proposed to account for just one or two examples, I began to realize that with selective use of a large enough set of rules, the order of any binary construction can be rationalized.

Are such rules built in or learned? The papers gave enough examples from other languages in which the preferred order of any construction is likely to be the reverse of the order in English that I doubt that there are many rules that are consistent across all languages. The shorter word first preference seems to have the best support.

Such support comes from the only experimental study I know of on this topic. Pinker and Birdsong (1979) asked subjects to indicate their preferences for order of two nonsense 'words'. They found support for Panini's shorter before longer words preference, and also for vowel quality and vowel length.

I want to turn now to evidence about POCs obtained from using Google on the Web. Take, for example, the possible POC *pen or pencil.* A Google search on this expression turns up 57,400 occurrences. A Google search on *pencil or pen,* on the other hand, yields 16,500 occurrences. Since the latter number is less than half that of the former, the former is, indeed, a POC under our definition. One can express the two numbers as a ratio of the higher number over the lower number. In the case of *pen or pencil,* this ratio is 3.5. Any ratio above 2 is a POC according to our definition. Let us look at some examples. **Table 1** (overleaf) gives the frequencies of some food and drink combinations.

As can be seen in the table, the food combination that comes closest to occurring in only one ordering is *peanut butter and jelly.* The second highest ratio, *gin and tonic,* would perhaps be higher were it not for the line from Billy Joel's *Mr. Piano Man*: *Making love to his tonic and gin,* placed in that order in order to rhyme with the previous line.

Some additional POCs are given in **Table 2**. These and many other examples were obtained from the students in my course, English Grammar. I held a contest, the prize for which was $20, for the student who found the most 'extreme POC', that is, the true POC with the highest ratio. Last year the prize was won by the student who found *mix and match.*

	A + B	B + A	Ratio
oil and vinegar	49.5K[1]	10.6K	4.7
ham and cheese	44.3K	6.3K	7.0
soup and salad	28.8K	2.2K	13.1
peanut butter and jelly	95,900	635	151.0
gin and tonic	39,500	900	43.9

Table 1. *Food and drink pairs.*

	A + B	B + A	Ratio
left and right	1,040K	460K	2.3
black and white	2,710K	281K	9.6
arts and science	208K	19K	10.9
yin and yang	121K	3.7K	32.7
pros and cons	1,640K	2.2K	745.5
cease and desist	149K	114	1307.0
mix and match	513K	392	1308.7

Table 2. *Contest entries.*

	A + B	B + A	Ratio
ladies and gentlemen	639K	12.7K	50.3
husband and wife	570K	14.8K	38.5
mom and dad	621K	36.9K	16.8
boys and girls	1,360K	368K	3.7
men and women	3.26M	1.08M	3.0
mother and father	344K	311K	1.1
'mother and father' -honor	296K	246K	1.2

Table 3. *Gender pairs.*

One of the proposed semantic rules is that the male precedes the female in pairs listing both sexes. As can be seen by the examples in **Table 3**, this rule does not always hold. While three pairs appear in that order (*husband and wife, boys and girls,* and *men and women*), two other pairs appear in the opposite order (*ladies and gentlemen* and *mom and dad*) and a third pair (*mother and father*) is very close to being equal in both orderings. To avoid the highly frequent expression 'honor thy father and mother', I checked for occurrences that did not contain the word *honor*. This did not change the results significantly. The two entries in the table for *mother and father* are in boxes with a grey shading to indicate that these are ***not*** POCs.

Students submitted so many entries for the POCs contest that I began to wonder whether almost all combinations had a preferred word order. So I instituted a second contest to find non-POCs. These were, indeed, harder to find. I required that there

	A + B	B + A	Ratio
health and safety	4.29M	2.26M	1.9
radio and television	1.76M	1.02M	1.7
countries and cities	56.5K	40.4K	1.4
dessert and coffee	17.3K	13.8K	1.25
time and space	1,070K	901K	1.19
bottles and cans	28.9K	24.3K	1.19
pleasure and pain	94.2K	80.9K	1.16
music and poetry	51.4K	46.5K	1.11
concrete and asphalt	25,400	23,100	1.10
quantity and quality	515K	467	1.10
family and friends	3.43M	3.17M	1.08
math and English	39.4K	39.1K	1.01
dogs and cats	704K	695K	1.01
'cats and dogs' –like-cats	647K	618K	1.05
jacket or sweater	10.4K	10.4K	1.00

Table 4. *Non-POCs.*

be at least 10,000 occurrences in one ordering to qualify as a legitimate pair. **Table 4** shows some of the pairs that students found.

One interesting fact is that at least one of these examples, *radio and television,* has appeared in a published paper as a proposed frozen form. Since the cutoff point of a two-to-one ratio is my arbitrary definition, it could be considered a POC if someone sets a different ratio. Nevertheless, these data show that the notion that there is a clear dichotomy between pairs that are frozen forms and those that are not is clearly false. It is clearly a continuum. To find out whether a particular pair qualifies, one must really check real data and not rely on intuition. It also appears that the vast majority of such frequent combinations do, indeed, have a preferred word order.

In the case of *dogs and cats*, I ran a second check, deleting the common simile *like dogs and cats* and *like cats and dogs.* In this case the frequency preference reversed, but not significantly. The winning entry was *jacket or sweater.* This was the only combination anyone found that had the same frequency to three decimal places in both orderings.

One way to test the legitimacy of the various proposed ordering rules is to see what happens to the frequencies as a result of making minor grammatical changes. The theory is that minor variations in form should not have a significant effect on the frequency ratio. **Table 5** (overleaf) shows some findings in this regard.

The first pair shows the difference in ratio when the conjunction is changed. The second pair shows the difference in ratio when the phrase is used as a noun (first one) versus when it is used as an adjective (second one). The third pair shows the difference in ratio when the items are singular versus when they are plural. And the fourth one shows the difference in ratio when the indefinite article is present. In each case

		A + B	B + A	Ratio
Conjunction	*coffee or tea*	135K	96K	1.41
	coffee and tea	568K	464K	1.22
Part of Speech	*drugs and alcohol*	399K	238K	1.68
	drug and alcohol	1.30M	1.29M	1.01
Number	*fork and spoon*	21.4K	9.92K	2.15
	forks and spoons	13.8K	13.5K	1.02
Use of Article	*"t-shirt and jeans" –a-t-shirt*	12.1K	14.6K	.83
	jeans and a t-shirt	23.4K	4.9K	4.76

Table 5. *The effect of grammatical variation.*

	A + B	B + A	Ratio
Asia and Africa	288K	283K	1.02
'the U.S. and Canada' site: .net	59.7K	7.45K	8.0
'Canada and the U.S.' site: .ca	47.4K	24.2K	1.96
'tea or coffee' site: .uk	21.1K	5.72K	3.69
'coffee or tea' site: .net	4.97K	4.25K	1.17

Table 6. *Evidence for semantic rules.*

the difference is significant, and in no case is any difference predicted by any of the phonological or semantic rules proposed in any of the previous articles on the subject that I have found.

I did find support for some semantic rules. One of my students came up with the non-POC *Asia and Africa.* Both continents are considered 'far' by most English language users of the Net. I wondered whether the results for *U.S. and Canada* would differ depending upon the location of the writer. I tested this hypothesis by limiting the searches to domains that were local to Canada and to the U.S. The domain suffix *.net* is mostly used for American sites, while the domain suffix *.ca* is used by Canadian sites. Here we found that Canadians tend to list Canada first, and vice versa (**Table 6**).

Similarly, the semantic rule 'more important precedes less important' or something like that seems to be applying in the case of *coffee or tea.* Tea tends to precede coffee in Britain, whereas there is a slight preference for the reverse in the U.S.

What can we conclude from these POCs data? It appears that people who are early users of coordinate combinations may well be affected by the factors proposed by linguists, but once a pattern is established, people repeat the combination in the order they heard it before. This implies that native speakers retain large numbers of whole combinations in long-term memory. These whole combinations may be distinctly remembered for different grammatical forms and uses. Thus it appears that, very often, utterances are not built by combining units at the word level, but rather by combining units at the phrase level.

One swallow does not a summer make.
Many a slip twixt cup and lip.
Water, water everywhere and nary a drop to drink.
...on the open-ended Richter scale.
...the love that dare not speak its name.
Lions and tigers and bears, oh my!

Table 7. *Examples built on clichés.*

Classical music does not a genius make.
Celebrity does not a politician make.
Bad Intelligence Does Not A Deceiver Make[2].
A perfect correlate does not a surrogate make.
A tired girl does not a poster make.
Intercept gear does not a lawsuit make.
A computer loaded with the latest souped-up design application "does not a designer make".
Money Does Not A Mafia Make.
Voting does not a democracy make.
One Song Does Not a Lawsuit Make.
One week does not a season make.
Trees Alone Does [sic!] Not A Forest Make.

Table 8. *"does not a * make" –summer.*

2. ODDBALL CONSTRUCTIONS. I wish to turn now to what I am calling 'oddball' constructions. These are constructions whose syntax is out of the ordinary. In particular, I wish to argue that many of these constructions derive from lines from poetry, movies, plays, or other famous quotations that have become clichés. Some of these become frames into which speakers can insert new lexical items. I wish to illustrate this principle with six examples, given in **Table 7**.

The first example, *one swallow does not a summer make*, appears to come from Aristotle, presumably in translation. Syntactically, this construction is more like German than English, with the main verb at the end and the auxiliary in second position. Google finds 1080 occurrences of those exact words on the web. But more interesting are the results of the search in which *swallow* and *summer* are replaced by wildcards. **Table 8** (overleaf) gives a few examples of the 19,000 hits found on the Net with this search.

Another 12,900 hits are obtained if two wildcards are inserted before *make*, a few of which are given in **Table 9** (overleaf).

Another 2,410 hits are obtained with three wildcards inserted, a few of which are given in **Table 10** (overleaf).

Is *make* the only verb that can appear in this frame? It is certainly far and away the most common, but others do appear. **Table 11** (overleaf) gives some of the hits

Illiteracy Does Not a Good Electorate Make.
Choice does not a happy consumer make.
A Cloned Cat Does Not A Copy Cat Make.
Vulgarity Does Not A Good Argument Make.
Talent alone does not a law firm make.
A clean shave does not a mainstream Muslim make.

Table 9. *"does not a ** make".*

Just bashing California does not a Northwest energy policy make.
One year does not a pattern or trend make.
A stellar salesperson does not a stellar sales manager make.
Roses, chocolates, expensive dinners, or in our case, a difficult schedule, strong high profile wins, and support from the polls does not a national championship always make.
A numb butt does not a cheery phone reservationist make
A Caucasian actor in heavy make-up does not a convincing Asian character make.

Table 10. *"does not a *** make".*

"one * does not a" -make	"one ** does not a" -make
One man does not a state define.	One rotten apple does not a basket spoil.
One speech does not a presidency break.	Having one's name dropped does not a slot guarantee.
One speech does not a university change.	One bad day does not a healthy lifestyle break.
One game does not a season ruin.	A one-way discussion does NOT a dialogue create!
One deal does not a trend maketh. [!]	One bad writer does not a paper taint.
One study does not a law maketh. [!]	One good ruling does not a bad ruling fix.

Table 11. *"one * does not a" -make* and *"one ** does not a" -make.*

using other verbs. If one of something doesn't make something true, what about two or three or four or five? Yup, all the way up to ten thousand! Some of the sentences Google found are shown in **Table 12**. Another possible variation—are there any occurrences in which the *not* is not there? There are a precious few, plus some more in which the *not* is there, but placed first. **Table 13** gives a few.

I believe that the reader would have to agree that people freely generate variations on the cliché to make their point. This counts on the listener knowing the cliché for its effect. One implication is that one must include such a construction in ESL training.

The next cliché I wish to look at is *There's many a slip twixt the cup and the lip,* which is attributed to Benjamin Franklin in his *Poor Richard's Almanac.* This, too, has become a frame upon which one can elaborate. This is interesting in that at least in

Two Weeks Do Not a Linux Tryout Make.
Two belches do not a belching contest make.
Three dates do not a relationship make.
Three words do not a seminar make.
Four years of medical school do not a physician make.
Four examples do not a definitive proof make.
Four meager spears of asparagus do not a salad make.
Five months do not a year make.
Five games do not a season make.
Six years of warmer weather do not a climate change make.
Six people do not a colony make!
Believe me, seven years and no ring do not a marriage make. Move out, now.
Eight guys in bear suits do not a movie make.
Nine nuts with small constituencies do not a government make, no matter who is mayor.
Three hundred and forty deaths do not a killer drug make.
Ten thousand Film Noir fans do not a consumer base make, sayeth the wise.

Table 12. *"two|three|four|five|six **|*** do not a"* [etc.].

Too many tears unshed does hatred make.
One drop passing does forgiveness take.
But one comment does a blog make.
One swallow DOES a summer make.
Or let me ask this... One drink does a drunk make?
For Boyd and his band, one game does a season make.
Not one game does a season make.

Table 13. *"one * does a * make".*

North America, *twixt* has become rare, *except* in elaborations of this frame. There are 4,050 occurrences of *many a slip twixt* on the Web. There are about 60 occurrences of the expressions with words other than *slip*. **Table 14** (overleaf) lists a few. Notice that in this case, there are far more occurrences of the original than of extended uses, the reverse of what was the case in the previous example. Notice also that since the original is a rhyme, a number of the extensions are rhymes or close rhymes as well (I have given these at the top of the list.)

The next example is 'water, water everywhere nor any drop to drink'. This well-known expression comes from Samuel Taylor Coleridge, *The Rime of the Ancient Mariner*. It, too, has become part of our culture and has been extended. The original expression occurs 993 times. A common modification is 'water, water everywhere, and nary a drop to drink'. This version occurs 75 times. But *nary* is old fashioned,

There's many a trip twixt the quip and the lip.
Many a Slip 'Twixt the Specs and the Chip
There's many a spill 'twixt the find and the kill.
There's many a flaw 'twixt the thought and the saw. [forestry]
There's many a slap twixt the cup and the lap.
There's many a slip twixt camera and pic.
Many a slip twixt point and click.
There's many a slip twixt plan and brick.
There's many a slip 'twixt implantation and the crib.
Many a slip twixt the promise and the page.
There's still many a slip 'twixt impeachment and only censure.
There many a slip twixt batch and swap.
Of course, there's many a slip twixt the CD and the net.
Many a slip 'twixt donor and recipient.
There's many a slip 'twixt Vancouver and Banff.
There's many a slip 'twixt sending out those invoices and getting the checks back in the mail.
Wine - many a slip twixt home and overseas.

Table 14. *"many a * twixt" -slip.*

Data, Data Everywhere and Nary a Bit to Drop.
Money, Money Everywhere--and Nary a House to Buy.
Inks, inks everywhere and nary a nib in the 1920s.
Changes, changes, everywhere and nary a moment to catch breath.
Jobs, Jobs Everywhere and Not a Job to Find.
Shoes, shoes, everywhere and not a foot to spare.
Moving boxes everywhere and not a spot to sit.
Data, data everywhere and not a jot of meaning.
Bigots bigots everywhere, and not a one can think.
Résumés Everywhere, and Not a One Worth Hiring.
Acrylamide, acrylamide everywhere, and not a crumb to eat.
Books Everywhere and not a Shelf to Spare!
Static, Static Everywhere And Not A Sound To Hear?

Table 15. *"everywhere and not|nary a" -water.*

and when it is replaced by *not*, one finds 1650 occurrences. And when one looks for *"everywhere and not|nary a" -water*, one finds 2780 hits, including those in **Table 15**.

One strange thing about the way people use this expression is that if someone wishes to convey the idea that something is ubiquitous in a poetic way and nothing

Terror, Terror, everywhere, and not a drop to drink
Code, code, everywhere, and not a drop to drink.
Jewish, Jewish, Everywhere, and not a drop to drink.
Feedback, feedback everywhere, and not a drop to drink.
Letters, Letters Everywhere, and not a drop to drink.
Wallpaper, wallpaper, everywhere, and not a drop to drink!
Tile, tile everywhere, and not a drop to drink.
Negroes, Negroes everywhere and not a drop to drink
Logic, logic everywhere, and not a drop to drink.
Microcosms everywhere and not a drop to drink.
Monkeys, monkeys everywhere and not a drop to drink.

Table 16. *"everywhere and not|nary a drop to drink" -water.*

appropriate fits the second half of the saying, people just add 'not a drop to drink' even though it makes very little sense! Some of the 808 examples found on the web are given in **Table 16**.

The next example is a bit different. What is strange about the expression …*on the* (*open-ended*) *Richter scale* is that it exists at all. For all other measures that I can think of, one just names the scale after the measured amount: *117° Fahrenheit, 3 tablespoons of sugar, 10 cm of rain, 220 lbs.* etc. Think of how strange the following sentences sound:

(10)　a. The temperature in Death Valley measured 117 on the (open-ended) Fahren-
　　　　heit scale.
　　　b. Next, add a quantity sugar measuring 3 on the (open-ended) tablespoon scale.
　　　c. The amount of rain that fell yesterday measured 10 on the (open-ended) cen-
　　　　timeter scale.
　　　d. He weighed 220 on the (open-ended) pounds scale.
　　　e. I then rotated the picture by 90 on the (closed-ended) degree scale.

The web informs me that Charles F. Richter, who created the scale in 1935 for measuring earthquakes, was dismayed when people thought that the upper limit on his scale was 10, since no earthquakes had reached that number. In an interview in 1980, he said, 'But there is no "scale of 10" in the sense of an upper limit (as there is for intensity scales); indeed, I'm glad to see the press now referring to the "open-ended" Richter scale'. That was twenty-five years ago, and yet 1880 websites still include *open-ended* to the expression. Granted, that represents only 2% of the references: the expression *on the Richter scale* registered 88,200 on the open-ended Google frequency scale.

Putting the issue of *open-ended* aside, why the convoluted way of referring to this scale as opposed to any other unit of measurement? The answer has to be that people started doing this when the scale was invented, and it is learned as a complete unit for this context. Why not *an earthquake measuring 3.9 Richters* or even more simply *a*

The Hawk that Dare Not Hunt by Day
The Sin That Dare Not Call Its Name
The love that dare not shut up Britney and Justin
The Love that Dare not be Legally Recognized
The Love that Dare Not Shut Up

Table 17. *"that dare not * its" -speak.*

3.9 richter earthquake. My Google searching led to fewer than 700 such references. As Robin Adams (undated), of the International Seismological Centre, Newbury, Berkshire, put it, 'It would be easier and save seismologists a lot of trouble if earthquake sizes were quoted simply in Richters'. And how open-ended is it? Adams pointed out that 'any quake of magnitude much more than 10 would destroy the whole Earth'!

The next expression I wish to consider is *the love that dare not speak its name.* This appeared in a poem by Lord Alfred Douglas and made famous when quoted by his lover, Oscar Wilde. There are 4720 appearances of *love that dare not speak its name* on the Web. This original form has spawned a similar number, 5130, of expressions that differ only in the noun before *that.* These replacement words include: *debate, war, loan, issue, science, family, vote, terrorism, coalition, bipartisanship, accent, hate* and so on. Longer phrases that appear before *that* include: *The United States is the empire…, Homeopathy: the therapy…, the XML conformance level…,* and *Christmas is fast becoming a holiday….* A search for substitutions of the word *speak* revealed another 838 entries, dominated by *A love that dare not squeak its name,* an article about homosexuality in penguins and animals in general that generated much commentary. A few other examples are given in **Table 17**.

What is most interesting about this quote is its effect on the grammatical usage of *dare.* Dare can be considered either as a main verb or as a modal auxiliary. As a main verb, it can be inflected: *dares, dared*; the negative appears on a preceding *do*: *doesn't dare, don't dare*; and the following verb is preceded by the infinitive marker *to.* As an auxiliary, it is not inflected: *he dare*; a negative is indicated with a following *not*; and the following verb is not preceded by *to.* Thus, *he dare not go* is an example of *dare* used totally as an auxiliary, while *he doesn't dare to go* is an example of *dare* used totally as a main verb. As **Table 18** shows, the affirmative of main verbs (as illustrated by *like* and *go* in the table) is much more frequent that the negative form. (The negative figures include both contracted and uncontracted forms, for example: *doesn't, does not.*) This is also true of affirmative auxiliaries and their negative counterparts. The one exception is the auxiliary version of *dare.* This is the only instance where the frequency of the negative actually exceeds the frequency of the affirmative form. I don't think it would be too farfetched to propose that the reason is that more and more people are choosing to use *dare* as a main verb, but, influenced by the Douglas/ Wilde quote, people are hanging on to the modal version in the negative.

My final example involves the famous quote from the 1939 MGM film, *The Wizard of Oz: Lions and tigers and bears, oh my!* There are 7,410 occurrences of the exact

	Affirmative	**Negative**	**Ratio**
he likes	1,060K	171K	6.2
he goes	1,360K	47K	28.9
he can go	117K	39.4K	3.0
he should go	96K	9.1K	10.5
he must go	54K	6.3K	11.8
he ought to go	4690	258	18.2
he dares	27.6K	8.83K	3.1
he dare	10.4K	11.5K	0.9

Table 18. *Proportion of negatives with modal form.*

Spiders and Worms and Crawlers, Oh My
Standards and Pinsils and Pennons, Oh My!
Cursors, and Text, and HTML.... Oh My!
Pupils and Porn and Games, Oh My.
Records and queries and keys, oh my!
Rhubarb and cherries and fireworks, oh my.

Table 19. *"and * and * oh my" –lions.*

quote on the web. However, whenever one has cause to name three objects or events, there is a great tendency to cast the construction like the MGM quote, and add an *oh my* at the end. The search *for "and * and * oh my" -lions* turns up 53,400 examples, a few of which are shown in **Table 19**. Thousands more can be discovered by allowing more than one word between the *ands*.

I will save for a later paper the effect of Shakespeare on our language—the 35,400 extensions of *to be or not to be*, as in *to upgrade or not to upgrade; that is the question*. Or the 947 extensions of the next line, as in *Whether 'tis nobler in the mind to suffer the slings and arrows of chronic renal failure*. Readers are invited to perform their own Google searches on their favourite quotes.

What can we learn from this motley collection of expressions and modified clichés? People learn whole phrases and larger units and adapt them to suit the content they wish to express. This is not to say that we don't ever construct sentences starting at the word level; rather it may in fact be rarer than most linguists have suspected, which suggests that the brain has capacity for learning far more phrase- and clause-level units than we have suspected, and it often seems to find it easier to build communication from these larger units than it would be to generate language strictly from the word level.

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[1] Google estimates are constantly changing. Generally the ratios reported here do not change significantly from one week to the next. In this and the tables the follow, K stands for thousand and M stands for million.

²   Phrases that appear in capital letters usually come from article titles.

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INTERMODAL CONGRUENCE IN CHILDREN'S PICTURE BOOKS: A PILOT STUDY

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IT IS A COMMONPLACE OBSERVATION that unfamiliar forms of music—either from other cultures or a style unfamiliar to one's own—sound like noise; the perception of music *as* music is quite transparently a culturally conditioned one. We have to learn how to hear music. The perception of visual art is less obviously a learned skill. While highly abstract forms, such as Rothko's paintings, may seem as uninterpretable as unfamiliar music, representational art with things that look like things may strike one as universal. It is easy to believe, for example, that the creator of a Byzantine saint's image was painting what a person looks like in the same way as the creator of a modern pop icon's image does, although certain nagging differences may catch one's attention (as in noticing that medieval landscapes look weirdly flattened). The perception of such representational art is, however, culturally conditioned as well; whatever iconism exists in it is richly interlarded with culturally specific interpretations. A medieval viewer might think that our landscape depictions have very odd proportions.

Kress and van Leewen (1996) hypothesize that at least some of the ways we construct our viewing of visual imagery are linguistic; that the technology of literacy, with its transformation of temporal to spatial linearity, has imposed a linguitic interpretation on the seriation of images: left is before right (for viewers used to reading Roman or Cyrillic writing systems) and this serial relation then becomes analogous to that between theme and rheme in language. Their work, as well as that of O'Toole (1994), has developed a detailed basis for analyzing visual imagery within the paradigm of Systemic Functional Grammar (SFG; cf. Halliday 1994 for an overview). SFG uses a trilateral approach to analyzing language—all text is viewed as simultaneously manifesting structure in three different domains: experiential, interpersonal, and textual. The analytic apparatus developed by O'Toole and Kress and van Leeuwen applies this trilateral approach to visual art. In O'Toole's case, it is applied to sculpture and architecture as well as to two-dimensional illustration.

If viewers do, in fact, construe images to some extent linguistically, one would expect to find particularly interesting connections between the verbal and the visual in texts which have as a major focus the combination of the two domains—illustrated travelogues, for example, or children's picture books, or richly pictorial science textbooks. While all writing is visual imagery (words on a page are inevitably a pattern of visual cues arrayed against a background), at the level of consciousness we typically focus on the script as an instantiation of language, rather than as an image. In illustrated genres, the linguistic text is presented along with material presented *as* image

in a way that strongly connotes intentional juxtaposition; it would be natural to expect the viewer to consider each as contextualizing the other. And if we wish to investigate how viewers come to structure their construals of visual imagery linguistically (if they do), children's picture books are of particular interest. Such texts, especially if experienced in a reading aloud event, present the child with particular repeatable linguistic items reliably paired with specific illustrations. There may be other, more varied, linguistic components of the event (people reading to young children rarely if ever confine themselves to saying only what is printed on the page), but repeated encounters with the text will present the child with a core experience of repeated pairings of linguistic and visual material. If adults do construe pictures linguistically, the child's picture book may be one of the places they learned to do so.

This is not to say that the pairings of language and image in picture books are, or even can be, simple matters of dual representation, with the language and the image providing more or less the same content. The modes inevitably contextualize each other—the viewer construes each in ways shaped by the other—but contextualization is not representation. The relations between the modes are varied and complex, as studies of children's picture books by literary theorists have repeatedly pointed out. Nodelman (1999:78), for example, writes that 'the actions implied by pictures are never the same as those named by words', and Hunt's distinction between picture books and illustrated books rests on the observation that the genre 'can develop the difference between reading words and reading pictures: they are not bound by linear sequence, but can orchestrate the movement of the eye' (1995:176). Hunt and others use the term 'picture books' for those texts in which meaning is primarily created only through the active juxtaposition of the two modes and 'illustrated books' for those books in which the picture is simply an intended representation of the scene developed by the linguistic text.

Given this frequent dichotomy between what the words say and what the picture shows, we might immediately wonder if it is possible to use a single framework to analyze both, let alone a specific linguistic framework. Dissimilarity is rarely absolute, however; if word and image are at odds, they need not be at odds across all dimensions of description—and by being juxtaposed with apparent deliberation on a page, even the most contradictory pairings will lead viewer/readers to attempt the construction of a unified meaning. One of the advantages of SFG as a descriptive framework is that it pursues multiple types of analysis simultaneously; if, for example, word and image prove to be quite dissimilar in terms of content and layout but quite similar interpersonally, the framework can still provide the basis for a useful description.

The pilot study described below used a very simple method (as it turns out, much too simple) to investigate possible linguistic structuring of illustrations in children's books: in brief, determining the extent to which sentence-level themes match figures presented in the left portion of illustrations. A link between relative leftness and thematic status has been discussed in Kress and van Leuwen's and O'Toole's analyses. Linear ordering has also featured in literary-critical treatments of children's literature; Hunt (1995:182) cites Moebius (1986) as arguing that 'a character shown on the left of a page is more *likely* to be secure than one on the right', and Nodelman (1988:135) notes

Margin Ideal Given	Margin Ideal New
Margin Real Given	Margin Real New
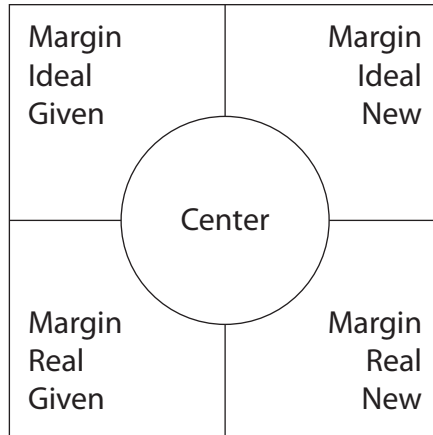
Center

Figure 1. *Schema mapping oppositions of given vs. new, center vs. margin and abstract vs. concrete to regions in a typical illustration.*

that 'the protagonists of many picture books—the characters we are asked to identify with—do tend to appear on the left more often than not'. The present study operated on the assumption that, even in texts with highly complex relations between language and image, the structuring of each could be similar in particular ways. The pilot study proved to be seriously flawed, if in interesting ways, and pointed out directions for further research.

THE PILOT STUDY. Kress and van Leeuwen's (1996:208) discussion of the structure of images in relation to the textual metafunction presents a useful schematization relating the oppositions of given/new, center/margin, and abstract/concrete to regions in a typical illustration (**Figure 1**).

The left side of the illustration is thus linked to Given and the right to New. Within SFG, a principled distinction is made between Given (a term referring to the status of the information vis-à-vis the shared discourse context) and Theme (referring to material the speaker has positioned so as to provide a basis for interpreting the rest of the clause); there are strong relations between the two sets of terms, but there are a number of reasons for distinguishing between them (e.g. most Thematic material is Given, but not all possible Given information is positioned as Thematic). Kress and van Leeuwen's model uses the terms Given and New in discussions of visual presentation. For the purposes of the pilot study, 'visual-Given' was considered analogous to both 'linguistic-Given' and 'linguistic-Theme'—a problematic step, but one which allowed for an initial rough comparison. In cases where an illustration is meaningfully juxtaposed to a single sentence, then, one might then say the linguistic text is thematically congruent to the image to the extent to which discrete material in the left portion of the illustration (provided the illustration is polarized, with different

discrete figures on left and right) corresponds to thematic material in the sentence. A high frequency of congruence across texts would create an environment that could, arguably, lead children to transfer a construal strategy from linguistic text to image.

To investigate frequency of congruence, the author assembled a set of children's picture books in which each picture was paired with very short text passages (listed in Appendix A). Initially, the author intended a one-sentence per image limit, but the often poetic nature of language in the books, as well as their use of intentional fragments, rendered this problematic. Sources of books included (a) a collection of children's books housed in the English department of the author's institution, which has historically been a teacher's college and which maintains a focus on K–12 education, and (b) private collections of two colleagues who are scholars in the area. The initial pool sampled was thus inherently non-random; the department collection does not include all children's picture books published at any particular time, and colleague's private collections were at least partly populated on the basis of literary merit, again giving rise to a non-random sample. Of the total set of books available, those with the required text/image ratio (i.e. one to two clause-complexes per discrete illustration) proved to be a very small subset; only about one in fifteen books surveyed met the criteria. Even canonical children's picture books, such as Dr. Seuss' *The Cat in the Hat*, tend to have multiple sentences per illustration, with themes shifting across the set of sentences.

Each text/image pair in the set selected for study was then evaluated to determine whether it was thematically congruent. The subject of the sentence, plus preceding material, was considered thematic for purposes of the study. Multiclause sentences presented a potential analytic problem; in practice, most cases involved sentences with initial main clauses, so only main clause themes were considered. In a sizable number of cases, thematic material could only be matched to imagery that was indeterminate as to left/right orientation. For example, the text in *Tulip Sees America* focuses on landscapes; pages typically start with a noun phrase punctuated as a sentence, followed by a clause complex with a pronominal subject having the preceding noun phrase as antecedent, e.g.:

> The farms in Iowa.
>> They are pictures: White houses. Red roofs.
>> Green, green rolling hills and black garden soil all around them.

While 'the farms in Iowa' do indeed appear on the left of the accompanying image, they occur on the right as well—it's a landscape, with houses and hills all across. The image is thus not polarized. Similarly, subjects in *Angels on the Head of a Pin* were usually plural collectives (*they*) for which corresponding referents in illustrations appeared distributed across an entire two-page sequence. These cases of spread reference could not be counted as either congruent or incongruent for purposes of the study.

2. RESULTS AND DISCUSSION. The initial finding that only a small proportion of children's picture books pair short, monothematic linguistic text with images strongly suggests that even if adults structure their construals of images in part linguistically, their childhood experiences with children's books are unlikely to be the reason. Moreover, while some books in the final sample proved to have a fairly high correspondence between sentential Theme and visual Given, such correspondence was rare enough to suggest that even in a sizable random sample, it might not be statistically significant in any sense. *Grandfather's Journey* provides a good example: in two of the image/text pairings, pairs of male and female figures are positioned so that whichever corresponds to the subject of the sentence is positioned on the left (15, 23), but the same work also has a pair of image/text pairs in which the sentences have the same subject while the figure corresponding to it appears on the right (18, 25). And in some books, there was a very low incidence of congruence; *My Best Friend Moved Away*, for example, has the same figure on the left in most of the pairings, but she is very seldom the subject of the accompanying sentence.

Despite the failings of the study, it did point out some potentially fruitful directions for further enquiry. The relations between linguistic Theme and visual Given could frequently be placed in one of three categories:

- **Thematic Left.** This category comprises the examples that are congruent, in terms of the pilot study. Left positioning corresponds to thematic status in the accompanying text.
- **Hyperthematic Left.** In some series of pairings, the figure on the left of the illustration rarely corresponds to the subject of the sentence but tends to repeat over many pairings. Thus, the linguistic theme could shift a number of times, and the stable figure still appeared in the left of the illustration. The term *hypertheme*, from Martin (1992), seems useful for describing this category, as the stable figure appears to act as a theme for the text as a whole, or at least for a discourse unit larger than a clause complex.
- **Narrative Index.** The most problematic examples for the study were those in which a figure corresponding to the subject of the accompanying text appeared on the *right* of the illustration. These were typically cases in which the figure was moving, leading the viewer through the book and in some cases indexing narrative motion by the direction of movement. In *The Paper Boy*, for example, its protagonist appears in the bottom right field on most of the pages, heading rightwards—but when he finishes his route, and heads toward home, he faces leftwards.

Some pairings, of course, fit none of these categories. The anomalous instances in *Grandfather's Journey* mentioned above (18, 25) can be viewed as a kind of symbolism. In the first of the pairings, the text ('He remembered the mountains and rivers of his home. He surrounded himself with songbirds, but could not forget') accompanies an illustration in which songbirds in cages are positioned on the left, with

the human figure on the right gazing somewhat pensively rightward, away from the birds, out a window. The second pairing has the text ('He raised warblers and silver-eyes, but he could not forget the mountains and rivers of California. So he planned a trip'), accompanies an illustration in which the human figure is again positioned on the right with caged birds on the left, but the figure is gazing leftwards at the birds. The birds thus, in a sense, appear to represent California, or at least the stage of the protagonist's life that was spent in California; he left it to go back to Japan, but considers returning. *Each Peach, Pear, Plum* displays a different but very systematic pattern of variance. The text is in the form of couplets, with the the rhematic material in the second verse introducing new participants that the child is to find in the illustration. These participants are partially hidden—the book constructs an 'I Spy' game, and it is integral to the purposes of the game that the new participants *not* be in a predictable portion of the illustration. Thus, the relative positions of old and new participants are quite variable in the illustrations.

Narrative indexing can be viewed as an artifact of the technology of writing, but not necessarily a linguistic issue per se. That is, learning to read English involves learning to scan from left to right, and thus to view left as before right. Movement is inherently bound up with time (and vice versa). To a reader of English, implied rightwards motion in a picture book is thus motion away from a starting point, movement from past to future. The juncture of direction and time is simply enabled by the same system that represents language.

The observation by Nodelman (1988:135) that protagonists or viewpoint characters often appear on the left relates closely to the hyperthematic left category above. *My Best Friend Moved Away* provides an almost pure example: nearly all of the sentences in the book either have the departed friend or a collective pronoun (*we*) as the subject. Yet the protagonist is clearly the girl who *doesn't* move away, the child coping with the friend's departure. And that girl appears on the left on almost every page, and in many cases gazes outward at the reader, establishing an interpersonal relationship that the departed friend does not.

In practice, a text using totally thematic left organization would be one in which the positioning of figures co-varies with thematic shifts in the text: figure position could be used to predict major clausal themes and vice versa. In texts with multiple thematic shifts, then, we could expect a succession of changes in relative figure position. In the hyperthematic left organization, the two systems are to some extent disjunctive; the two types of organization converge only in texts in which main-clause theme does not change across the text. In principle, of course, there is a third possibility: relative positions of figures could change quite frequently and linguistic themes could shift frequently within the text, but with the two remaining disjunct; it would then be difficult to identify a hypertheme in any sense. It's stability across units that produces hyperthemes.

The pilot study suggests that the degree to which image and text thematically interlock in children's picture books is neither constant nor completely random, but rather a stylistic variable needing further study. How does this variable affect the meanings

that readers construct from these texts? The protagonist figure in the images of *My Best Friend Moved Away* provides an antecedent for the pronoun *my* used in the text, but the text could have cast the protagonist as linguistic theme (e.g. *I feel sad because…*). How, then, would perceptions of the text have differed? Such questions can only be answered by juxtaposing linguistic and visual analyses.

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APPENDIX: CHILDREN'S BOOKS USED FOR SAMPLE

Ahlberg, Janet & David Ahlberg. 1999 (1988). *Each peach, pear, plum*. New York: Viking.

Awbry, Rev. W. 1999. *Thomas the tank engine's hidden surprises*, illustrated by Josie Lee. New York: Random House.

Banks, Kate. 2002. *The turtle and the hippopotamus*, illustrated by Tomeck Bogacki. New York: Farrar Straus Giroux.

Berger, Helen. 2000. *Angels on a Pin*. New York: Philomel Books.

Blackstone, Stella. 1996. *Who are you?,* illustrated by Debbie Hunter. New York: Barefoot Books.

Bono, Mary. 2002. *Ugh! A bug*! New York: Walter & Co.

Carle, Eric. 2000. *Does a kangaroo have a mother too*? New York: HarperCollins.

Carlson, Nancy. 2001. *My best friend moved away*. New York: Viking.

Collier, Bryan. 2000. *Uptown*. New York: Henry Holt.

Dunn, Opal. *Little boat*, illustrated by Bettina Paterson. New York: Henry Holt.

Edwards, Pamela Duncan. 2000. *Roar! A noisy counting book*, illustrated by Henry Cole. New York: HarperCollins.

Elya, Susan Middleton. *Eight animals on the town*, illustrated by Lee Chapman. New York: G. P. Putnam's Sons.

Esbenson, Barbara Justes. 1999. *Jumping day*, illustrated by Maryann Cocca-Leffler. Hanesdale pa: Boyds Mills Press.

Gorbachev, Valerie. 1999. *Where is the apple pie*? New York: Philomel Books.

Johnson, Angela. 2001. *Those building men*, illustrated by Barry Moser. New York: Blue Sky Press.

Kimmel, Eric A. 2000. *The runaway tortilla*, illustrated by Randy Cecil. Delray Beach fl: Winslow Press.

Kress, Gunther & Theo van Leeuwen. 1996. *Reading images: The grammar of visual design*. New York: Routledge.

Lawrence, John. 2002. *This little chick*. Cambridge ma: Candlewick Press.

Lundgren, Barbro & Olof Landström. 2002. *Benny and the binky*, trans. by Elisabeth Kallick Dyssegaard. New York: R&S Books.

Lyon, George Ella. 1992. *Who came down that road?*, illustrated by Peter Catalanotto. New York: Orchard Paperbacks.

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Rylant, Cynthia. 1998. *Tulip sees America*, illustrated by Lisa Desimini. New York: Blue Sky Press.

Sendak, Maurice. 1991 (1963). *Where the wild things are*. New York: HarperCollins.

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DO DIFFERENT BRAIN MECHANISMS EXIST FOR DIFFERENT TYPES OF LINGUISTIC REASONING?

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THIS STUDY EXAMINES INFERENTIAL LINGUISTIC REASONING, an activity indispensable to our ability to create and comprehend the interconnections between sequences of language. The definition of inferential reasoning used in this paper is what Grafman and Goel (2003) call 'the cognitive activity of drawing inferences from given information', adding that 'all arguments in reasoning involve the claim that one or more propositions provide some grounds for accepting another proposition'. This definition unites what is often studied under two different areas; one labelled **reasoning**, which primarily examines inference-drawing related to three-line syllogisms, the other being the act of **text** or **discourse comprehension**, which besides researching phonological, syntactic and lexical processing, also examines inference-drawing skills related to the processing of written or oral texts. This paper, however, focuses specifically on the aspect of comprehension which allows inferences to be drawn from discourse.

According to the above definition, inference drawing in relation to syllogisms as well as in discourse comprehension can be viewed according to their commonalities, allowing both to fall under the general banner of **reasoning**. This is appropriate, given that whether we are dealing with formal syllogisms or spy novels, we are drawing inferences, meaning that we are creating or evaluating information that has not been explicitly stated in textual premise(s), regardless of the number or form of these premises.

For inferential reasoning processes to be carried out, whether in syllogisms, texts or conversation, the brain must process information regarding premises and a conclusion, evaluating their relationship. The question explored here regards what kind of brain architecture carries out this complex processing. Two opposing models have been put forward. Vital to the discussion are **categories** of reasoning.

Aristotle provided us with two primary reasoning categories labelled **deduction** and **induction**. Although we will not be examining the latter experimentally, both are relevant to the upcoming discussion. An example of deduction follows.

(1)   Every plant with large leaves loses its leaves.
        <u>Every vine is a plant with large leaves.</u>
        Every vine loses its leaves.

The reasoning involved in this argument can happen in two different ways. Based on the premises, one can draw the conclusion. Alternatively, a person given all three

sentences can evaluate the relationship of the final sentence to the first two, decid-
ing that if the premises are true, it must necessarily follow that the conclusion is true.
Either of these activities could be called deduction. What is vital to note is that the
relationship between the premises and the conclusion is one of formal validity.

The following sentences are an example of **induction**.

(2)   These dogs are from Africa.
          <u>These dogs are brown.</u>
          All the dogs in Africa are brown.

Philosophers and cognitive researchers have used the term induction in many ways.
Historically, the term usually applies to the movement from specific knowledge to a
more general statement of things. Secondly, in induction, premises do not guarantee
conclusions but rather suggest them. It is this second characteristic which is used as the
primary requirement of what will form our second category of reasoning. Although
some authors refer to arguments fulfilling only the second requirement as induction,
we prefer to simply refer to this type of reasoning as **probabilistic**. Of course, calling
only inductive reasoning probabilistic is misleading, considering that deductive reason-
ing results in a conclusion marked by probability as well. In this case the probability is
always limited to zero or one. Thus according to the stricter definition of induction, all
inductive reasoning is probabilistic, but not all probabilistic reasoning is inductive. We
also wish to note that although logical and probabilistic reasoning have been chosen as
categories of reasoning for this and other studies, this does not imply that all reasoning
is limited to these two categories.

Now that two broad forms of inferential reasoning have been delineated, one in
which the premises guarantee the conclusion and another in which the premises only
suggest the conclusion, we turn to two opposing theories of how humans carry out
these processes.

The first theory, known as Mental Model Theory, presents a single mental mecha-
nism possessing a general and multivalent nature responsible for carrying out both
logical and probabilistic reasoning (Johnson-Laird & Byrne 1991). The mechanism
works by carrying out a series of steps; the construction of several models of one or
more premises, the insertion of a possible conclusion into those models, and finally
the evaluation of whether the conclusion is true in each model. If the conclusion is
true in all of the models, the conclusion is considered to be true. In another scenario,
if the conclusion is found to be true in most, but not all, of the models, the conclusion
is considered to be probable. Similarly, if a conclusion is found to be true in a single
model out of many that were constructed, it would be considered to be possible, but
not likely. Johnson-Laird (1995) predicts that the neural correlates of this mecha-
nism exist in the RH. Various psychological (Klauer & Oberauer 1995, Schaeken &
D'Ydewalle 1996) and neurological (Knauff et al. 2002) experiments have been car-
ried out which lend credence to various aspects of mental model theory.

The opposing point of view, Mental Logic Theory, claims that the human brain has a range of separate neural mechanisms, each adapted to a particular type of reasoning process (Boole 1848, Braine 1978, Henle 1962, Rips 1994, 2001, Rock 1977). According to this theory, logical inferences would be processed by a psychological and neural system that is at least partially independent from the system that processes probabilistic inferences.

In recent decades, research has been carried out in search of the location of the neural activity underlying inferential reasoning (Caramazza et al. 1976, Read 1981, Golding 1981, Brownell et al. 1986, Wetzel & Molfese 1992). We limit ourselves to a description of those which make direct comparisons of deductive and probabilistic reasoning.

First in this group is the only study carried out to date on a clinical population. The 1998 experiment by Eisele, Lust and Aram on unilaterally brain-damaged children ranging from 4 to 17 years with age-matched controls used sentences containing factive and nonfactive verbs to stimulate deductive and probabilistic reasoning respectively. 10 of the clinical participants suffered from RH damage while 14 suffered LH damage. Results indicated that both clinical groups of children had difficulty carrying out linguistic deduction but those with LH damage had greater difficulty, indicating that both hemispheres, but especially the left, are responsible for deductive reasoning. Both groups had difficulties with probabilistic reasoning, but specific language problems hindered the researchers from drawing conclusions in this area.

The remainder of the research comparing neural activity behind deductive and probabilistic reasoning consists of studies based on neuroimaging.

Goel et al. (1997) used PET imaging and concluded that both types of reasoning involved the left prefrontal cortex. However, different neural correlates underlie each type of activity, as each type showed activity in different parts of the prefrontal cortex.

Osherson et al. (1998) performed a PET study of healthy subjects. It contradicted the other studies by declaring neural activity underlying deduction to be in the RH anterior cingulated gyrus as well as a series of primarily RH posterior regions. Probabilistic reasoning was shown to share its neural correlates between the RH insula and the LH prefrontal cortex.

Parson and Osherson's (2001) PET imaging study partially confirmed Osherson's findings, declaring the RH to play the predominant role in deduction and the LH in probabilistic reasoning. Of particular interest was their assertion that the specific areas used in deduction were the RH equivalents of Broca's and Wernicke's areas used for linguistic processing in the LH.

Researchers who divide reasoning into different categories from those examined here also ask the question of whether different neural systems support different types of reasoning. Dolinina reports (2001) on a set of studies carried out in the early 1970's in St. Petersburg (possibly by Balonov and Deglin, although this is not completely clear in her article) which look at theoretical and empirical reasoning. Her use of the term theoretical corresponds to our own use of the term deductive while empirical is described as 'pre-logical'. The study attempted temporary suppression of one brain hemisphere at a time in order to better understand the capacities of the working

hemisphere. Reported results of the study state that the two types of reasoning have separate neural substrates with the LH being the primary seat of theoretical, deductive reasoning while the RH is responsible for the empirical type.

Of particular interest here is her understanding of the fact that the existence of distinct neural substrates should not necessarily be associated with the idea that these systems are innate. Dolinina clearly states the point of view that 'individuals in a "traditional" society can use only an empirical ("pre-logical") mode, whereas individuals in "advanced" societies can use a theoretical ("logical") mode'. It seems likely, in this case, that some reasoning systems may be seen as innate whereas others are learned through formal instruction.

The above study supports the idea that deduction is supported by the LH, although its results are difficult to evaluate, given the limited description of its experimental design and protocol.

Further research explores different types of deductive reasoning. Goel's experiments suggest the existence of separate neural pathways underlying two proposed types of deductive reasoning; one LH temporal system processing content-based stimuli and another system, primarily parietal, processing stimuli lacking semantic content. (Goel et al. 1998, Goel et al. 2000).

Overall consensus regarding whether deductive and probabilistic reasoning require joint or separate neural systems does not yet exist. Even amongst those cited here who agree that separate neural systems exist, disagreement remains regarding the location of their respective neural systems. These differences are likely to result from research design and the nature of brain scanning equipment. Temporal resolution of equipment measuring brain activity may vary greatly. The duration of scanning or brainwave measurement in the studies discussed above varied from 1500ms (Wetzel & Molfese 1992) to 50 seconds (Osherson et al. 1998), meaning that one study analysed brain activity during a time span 30 times longer than the other. The use of equipment with high temporal resolution will hopefully allow complex higher-level cognitive processes to be more accurately observed.

The aim of the present study is to observe the neural activity underlying deduction and probabilistic reasoning along with a baseline measure of what will be called 'neutral reasoning'. To fulfil this aim, an electroencephalogram was used to record N400 brainwaves, a wave shown by Wetzel and Molfese (1992) to be directly related to inference. Brainwaves produced while carrying out different types of inferential reasoning were compared with each other to determine whether they are or are not significantly different from each other. The choice of EEG as a tool for measuring brain activity allows us to take into account the ephemeral nature of mental processes thanks to the EEG's high temporal resolution, which enables us to analyze brainwaves in the timeframe of the millisecond.

In an attempt to better isolate the two conditions of deductive and probabilistic reasoning under experimental conditions, we include a third task meant to act as a baseline category. We call this category **neutral reasoning**. As the name suggests, in neutral reasoning, the relationship between the premise and the conclusion is one

in which the premise neither guarantees nor suggests the conclusion. The relationship is instead such that the premise allows for the possibility of the conclusion's truth without encouraging or discouraging the person to judge the conclusion as being probable. Neutral reasoning is included in this study to distinguish between conclusions which are judged to be **probable** and those judged to be merely **possible**.

We have now developed three degrees of implicature which are represented by the following list of propositions, the first being certain, the second being probable and the third being neutral in their relationships to the given premise.

(3)   Premise: John has a new Porsche 911.
         (A) John has a car.   (deductive)
         (B) John is rich.   (probabilistic)
         (C) John has a sister.   (neutral)

1. METHODS. The task given to each participant was to report how likely to be true several given sentences were, based upon a provided premise. Sentences were designed to inspire the three different types of reasoning discussed above.

1.1. SUBJECTS. Eleven adult native French speakers were recruited to take part in this study. The group consisted of three men and eight women having an average age of 22.44 years (range: 20 to 28). All subjects were right-handed with no serious prior health problems and were not on medication.

1.2. MATERIALS AND PROCEDURE. A printed premise was given to the participant to read as many times as desired. They were instructed to consider this proposition as true. They were then shown other sentences and were asked to evaluate their truth based upon the premise. Subjects were given three possible categories of response. These were (A) 'certain to be true', (B) 'likely (but not certain) to be true', and (C) 'possibly true' (not more likely than unlikely). Possibilities such as 'certain to be false' and 'likely to be false' were omitted for the sake of simplicity, but participants were instructed not to answer if they felt that none of the choices were appropriate.

One premise, made of two sentences, follows.

(4)   Pierre discovered a cure for cancer in New York. Then, he returned to
         Poitiers to re-start his work as a professor.

A sample of the types of sentences presented as possible conclusions follow.

(4)'   A. Pierre went to New York.   (deductive)
       B. Pierre is intelligent.   (probabilistic)
       C. Pierre is married.   (neutral)

Sentences of type A, B, and C were meant to bring about deductive, probabilistic, and neutral reasoning respectively. 60 propositions were presented in random order, 20 for each experimental condition. Acknowledging that experience and world knowledge can affect our reasoning, it was predicted that while some participants would find a sentence like C to be merely possible, others might find it highly probable. In order to ensure that brain activity from the appropriate kind of reasoning was being measured, any brainwaves immediately preceding an inappropriate answer were discarded and not analyzed. All responses that corresponded to the experimental categories were considered to be representative of the intended thought processes.

The 60 propositions were short, simple, and homogeneous in both phonetic and syntactic form, all beginning with the subject 'Pierre', followed by a verb and either a complement or an object. In the group of propositions intended to evoke the workings of the logical deduction system, the propositions were written in such a way that they were logically implied by the premise. No proposition in the other two categories represented this deductively valid quality. The propositions were presented on a computer screen. Each subject was seated in a soundproof room, facing a computer screen (Philips – 36cm). Each word of each sentence was presented successively in 15 point Boston font. All words were presented in black letters except for the last word of each sentence which was presented in red. Each participant was informed that each word in red letters indicated the end of the sentence and that at this point a response should be made by pushing the appropriate button.

Each subject carried out several practice runs with similar stimuli in order to become familiar with the system.

Each word was presented onscreen for 600 ms with an interval of 2500 ms between the presentation of each word. Potentials were recorded by a Nicolet SM 2000 amplifier driven by an INSTEP system. Silver electrodes were applied to the scalp according to the 10/20 system of the International Federation (Jasper 1958). Electrodes were also linked to the earlobes and forehead. Ocular movements were monitored through horizontal and vertical electro-oculogram electrodes. The impedance of the electrodes was controlled before and after the recording of evoked potentials. The bandwidth was from 0.50 to 70 Hz. The amplitude was evaluated with reference to the 50 ms preceding each stimulus. The beginning of the stimulus was considered to be the presentation of the sentence's last word. From this point, nine N400 waves were recorded per proposition, or a total of 540 ERPs per person. The intent to measure N400s which were responses to pragmatic considerations regarding the relationships between entire sentences and not to individual final words in sentences was ensured by using a variety of word classes to occupy the final position in each proposition. In addition, no final word in any of the 60 stimuli sentences was judged as being used in a semantically, morphologically or syntactically marked fashion, all of which have been shown to affect N400 amplitude (Kutas & Hillyard 1980 and 1983, Osterhaut 1990).

 The computer determined which responses were appropriate for analysis and only the correct responses were averaged. A waveform was established for each subject and for each type of response**.** A corresponding waveform was recorded for each of
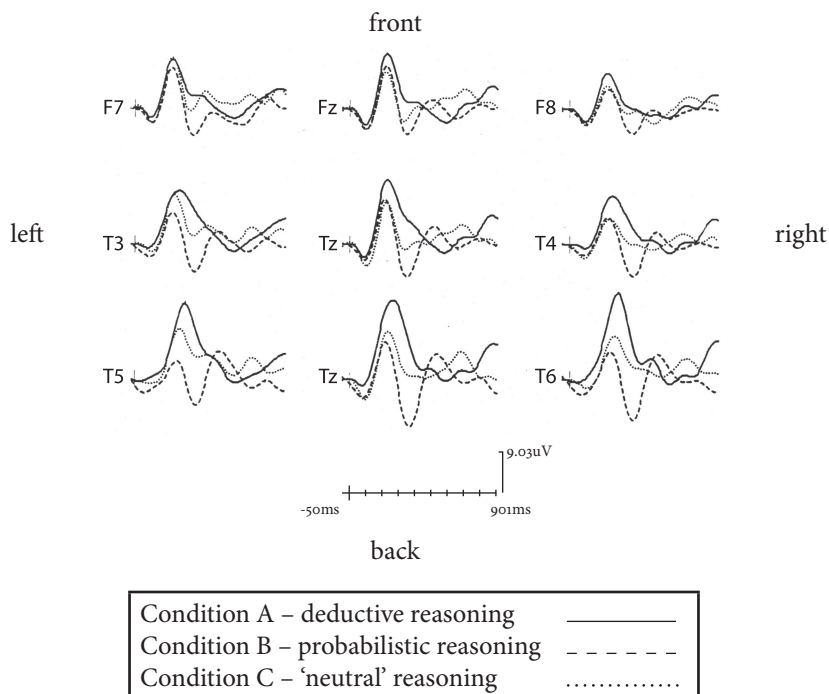
Figure 1. *Averages of brainwaves elicted by the three tasks.*

nine electrodes. The average amplitude of the N400 wave was submitted to an analysis of variance in the three conditions and according to localisation, by grouping the electrodes in two ways: the first comparing anterior (F7, FZ, F8), median (T3, C2, T4) and posterior (T5, PZ, T6) ERPs and the second comparing right (F8, T4, T6) vs. left hemisphere (F7, T3, T5) ERPs.

2. RESULTS. **Figure 1** represents averages of brainwaves elicited by the three tasks with each of the nine figures representing an electrode and its placement on the scalp. F7 represents the measurements recorded in the anterior LH while T6 represents those recorded in the posterior RH. The center line dividing the two hemispheres is represented by the electrodes FZ, CZ and PZ. Each electrode has three corresponding waveforms, each representing one of the three reasoning conditions. Each wave represents an average of all waveforms measured by a single electrode. In **Figure 1**, a wave's descent towards the bottom of the page represents an increasing negativity.

Analyses of anterior / posterior positioning for each condition (**Tables 1–6**, overleaf) show a significant difference to exist between the three positions in the condition of deductive reasoning. Anterior positions display significantly more ample N400 waves than do the median and posterior cortical regions. Neither the probabilistic

Position	Mean	SD	SE
anterior	1.11	6.58	1.99
median	5.30	7.45	2.25
posterior	8.63	6.27	1.89

Table 1. *Deductive reasoning.*

Position	Mean	SD	SE
anterior	3.33	15.17	4.57
median	2.02	10.21	3.08
posterior	4.42	11.22	3.38

Table 2. *Probabilistic reasoning.*

Position	Mean	SD	SE
anterior	-4.56	5.45	1.64
median	-3.95	4.77	1.44
posterior	-4.38	4.19	1.26

Table 3. *Neutral reasoning.*

Position	Difference	SE	P
anterior – median	-4.1	2.89	0.36
anterior – posterior	-7.51	2.89	0.04
median – posterior	3.33	2.89	0.52

Table 4. *Deductive reasoning. ANOVA between 3 groups / position F=3.38, P=0.047.*

Position	Difference	SE	P
anterior – median	1.30	5.28	0.97
anterior – posterior	-1.09	5.28	0.97
median – posterior	-2.40	5.28	0.90

Table 5. *Probabilistic reasoning. ANOVA between 3 groups / position F=0.10, P=0.90.*

Position	Difference	SE	P
anterior – median	-0.61	2.06	0.95
anterior – posterior	-0.17	2.06	0.99
median – posterior	0.43	2.06	0.97

Table 6. *Neutral reasoning condition. ANOVA between 3 groups / position F=0.04, P=0.95.*

Position	Left	Right	T	P
anterior – median	6.51 ± 7.63	3.85 ± 5.97	2.31	0.95
anterior – posterior	4.91 ± 9.22	3.82 ± 12.76	-5.55	0.99
median – posterior	-3.09 ± 4.53	-1.86 ± 4.05	-1.42	0.97

Table 7. *Comparison of LH vs. RH for all reasoning conditions.*

nor neutral reasoning condition shows significant differences to exist between the three brain regions.

Analyses of laterality (**Table 7**) show that the RH is significantly more active than the LH in deduction. Neither of the other two conditions display significant differences between hemispheres.

3. DISCUSSION. Results indicate that language-based deductive and probabilistic reasoning are carried out using different neural correlates. This, in turn, supports the theory claiming that at least two mental mechanisms exist to support different types of reasoning. The main evidence for these claims lies in brainwave activity when compared in anterior and posterior areas of the cortex. A comparison of reasoning types showed deduction's N400 as significantly more ample in the anterior than in the posterior region. This suggests that anterior cortical areas were approximately 8 times more active than posterior areas during deduction. In contrast, the processing of both probabilistic and neutral reasoning appear to be much more evenly distributed throughout the brain on an anterior/posterior axis. These analyses, taken in conjunction, show very different pictures of the reasoning brain at work, depending upon whether deductive or probabilistic reasoning is being carried out.

A comparison of RH vs. LH activity showed a significant difference to exist between the two hemispheres only in the condition of deductive reasoning, with the RH showing more activity than the left. This concurs with the findings of researchers using PET scans (Osherson 1998, Parsons & Osherson 2001) but contradicts the findings of those using ERPs and data from brain-damaged patients (Wetzel & Molfese 1992; Eisele, Lust & Aram 1998). The finding that linguistic deduction is concentrated in the frontal lobes concurs with evidence associating the prefrontal cortex with executive attention and strategy functions (see Parsons & Osherson 2001 for detailed discussion). However, the difference between activity of the right and left hemispheres in deduction paled in comparison to the marked distinction between that shown on the anterior/posterior axis. No significant differences between hemispheric activity were reported in either the probabilistic or control conditions.

Wide distribution of cortical activity in each condition suggests, as could well be expected of such complex activities, that several sub-mechanisms may partake in the processing of each type of linguistic reasoning. For example, it has been posited that posterior brain regions may contribute to visuo-spatial processing which could play a part in reasoning (Grafman & Goel 2003).

These findings fit well with Lamb's (2004) descriptions of a cognitive system in which bidirectional connectivity between and within sub-mechanisms are said to play an important role in inference-making. Lamb's research outlines an elegant mental network which divides the world into tangible segments and categorizes them based on the relationships between them, such as shared properties. In his system, mental concepts are represented by nodes. Each conceptual node is linked to numerous other nodes which may represent individual properties of the concept, other concept nodes related to the original one, and related nodes in other mental sub-systems.

The bidirectionality between these nodes means that lower-level nodes can activate higher-level ones and vice-versa. Furthermore, activation can be spread amongst various sub-systems. According to Lamb, the capacity of many nodes to be activated simultaneously aids in the triggering of inferences. Lamb's description may be particularly useful in developing a model of probabilistic reasoning in which widely distributed world knowledge is required.

Standard deviations from each condition point to the fact that greater neural variety exists in probabilistic than in other types of reasoning. This matches the supposition that this type of reasoning relies upon world knowledge which is specific to each individual. It also seems plausible that a greater number of strategies may be available for probabilistic reasoning than deduction.

Finally, repeated reports of the RH's dominance in linguistic deduction highlight the need for greater questioning of the roles often attributed to each hemisphere in regard to the neurology of language processing.

ACKNOWLEDGEMENTS

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ONTOLOGY ENGINEERING FOR LINGUISTIC INFORMATION: IMPLEMENTING RELATIONAL NETWORKS

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IN THIS PAPER[1], I discuss the implementation of a network form of representation of linguistic information based on Relational Network Theory called Relational Network Notation (RNN). Frame Logic (FLogic), an ontology modeling language, together with Ontobroker, a database engine, are used to implement RNN. The ontology engineering environment also includes an inferencing capability which may be used to extend the knowledge base.

1. RELATIONAL NETWORKS.

1.1. RELATIONAL NETWORK THEORY. Elaborating on the nature of language as an information system, Lamb (1974) describes it as 'a network of *interrelationships*'. This network is composed only of nodes and their connections. Lamb makes no distinction between linguistic information and non-linguistic information; all information is stored and processed the same way, as connections in a vast network. Information processing consists of (a) the transmission of activation along pathways defined by the network, and (b) changes in connection strengths. Mental networks (made up of nections) form the basis for our representation of reality. The model proposed by the theory is constantly being tested against the findings of neuroscience (Lamb 2004).

Lamb's Relational Network Theory (Lamb & Webster 2004) provides the conceptual basis for implementing an interface ontology extending from the lexicogrammar as ground to meaning and context above. The boundary between lexicogrammar (wordings) and semantics (meanings) is a stratal one. Interface ontologies maintain this stratal distinction between conceptual and lexicogrammatical information while providing the means for mapping between them—'an abstract semantic organization underlying our use of grammar and lexis that is motivated on essentially *linguistic* grounds and that acts as a complex interface between lexicogrammatical resources and higher-level strata in the linguistic system…' (Bateman 1991:31). On the one hand, the conceptual or sememic level provides the motivational covering or context for each choice that the grammar provides, while on the other hand, the lexicogrammar serves as a resource for both understanding and articulating semiotic constructs at higher strata of meaning and context.

1.2. RELATIONAL NETWORK NOTATION. The focus of this paper is on showing how relational networks can be represented using Relational Network Notation (RNN). RNN
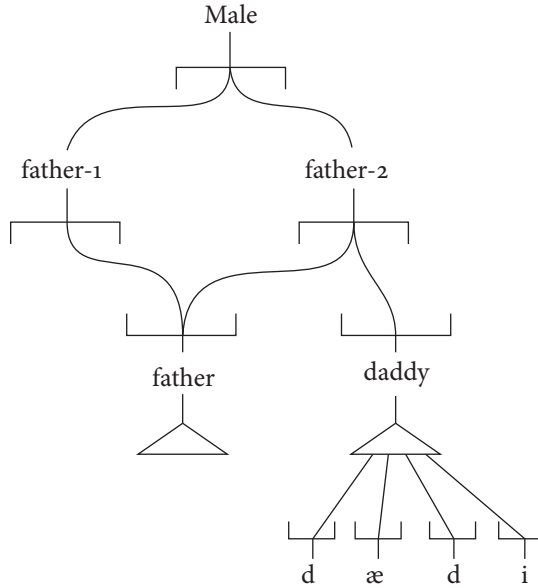
Figure 1. *Relational network diagram for* father.

is based on Relational Network Theory, and offers a simple yet powerful means for representing lexicogrammatical, semantic and sememic information.

Figure 1 illustrates the network diagram for the lexeme *father*, in which there are multiple sememes represented by the same lexeme *father*. In other words, *father* can refer to the male parent or to a clergyman in the Roman Catholic or Anglican churches. This network diagram illustrates an *OR* node extending from a single lexemic unit upwards to several sememic units. Conversely, in the case of synonymy (e.g. *father-daddy, big-large, hard-difficult*) there is more than one lexeme connected to a single sememe via another node.

2. ONTOLOGY MODELING.
2.1. ONTOLOGY MODELING WITH FLOGIC. I am using an ontology modeling language called Frame Logic (FLogic), along with various tools which together comprise a kind of ontology engineering environment to facilitate implementation of relational networks. FLogic is a database logic which 'accounts in a clear and declarative fashion for most of the structural aspects of object-oriented and frame-based languages', including such features as object identity, complex objects, inheritance, methods, etc. (Kifer 1995).

The first step in designing an ontology involves **conceptualizing** the problem domain in terms of concepts and relations. A **node**, the most basic concept, **points to other nodes**. The arc(s) between nodes is/are described by the **method to@,** which takes up to three parameters: a **threshold** value, an **identfier**, and a **sequence**. The threshold value is the number of arcs pointing from the node (where 1 = OR;

> 1 = AND). The **identifier** is the parameter uniquely associated with that node. If the lines are Ordered, then a **sequence** value (1,2…n) is provided; if the lines are Unordered, then no sequence value is assigned. This is stated in FLogic with method overloading (Ontoprise 2003) as follows:

(1)   node[to@(threshold,identifier)=>node].
(2)   node[to@(threshold,identifier,sequence)=>node].

The parameterized method **to@** describes the arc between nodes and takes either two or three parameters, depending on whether the arcs are Ordered or not.

Instances—the actual linguistic data—corresponding to the information shown in **Figure 1**, may be input into the knowledge base in FLogic as follows:

```
instance1:node[to@(1,Male)->>{instance1,instance2}].
instance2:node[to@(1,Father2)->>{instance4, instance5}].
instance3:node[to@(1,Father1)->>instance4].
instance4:node[to@(1,father)->>{instance2,instance3}].
instance5:node[to@(1,daddy)->> instance2].
instance6:node[to@(4,father,1)->>instance8;
      to@(4,father,2)->>instance9;
      to@(4,father,3)->>instance10;
      to@(4,father,4)->>instance11].
instance7:node[to@(4,daddy,1)->>instance12;
      to@(4,daddy,2)->>instance13;
      to@(4,daddy,3)->>instance14;
      to@(4,daddy,4)->>instance15].
instance8:node[to@(1,f)->>instance6].
instance9:node[to@(1,a)->> instance6].
instance10:node[to@(1,th)->> instance6].
instance11:node[to@(1,er)->> instance6].
instance12:node[to@(1,d)->> instance7].
instance13:node[to@(1,æ)->> instance7].
instance14:node[to@(1,d)->> instance7].
instance15:node[to@(1,i)->> instance7].
```

Axioms allow one to infer new knowledge (and thereby increase the size of the knowledge base). One can write axioms, for example, which take the linguistic information about lexemes/words and sememes/concepts (both represented as a network of relationships) and further identify lexical relations such as synonymy, etc. This is illustrated in the following FLogic statements:

(3)   FORALL X,Z,Y Z[sem_parent->>Y]<- X[to@(1,Z)->>Y] AND Z:sememe
       AND Y:lexeme.
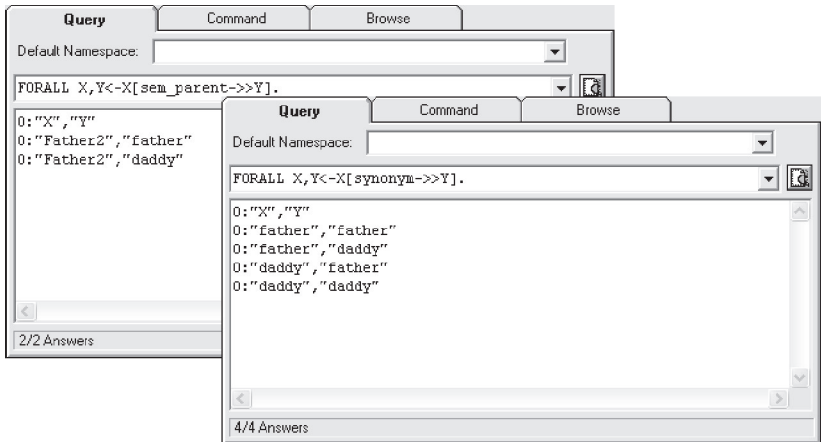
Figure 2. *Displaying query results in Ontobroker.*

which may be re-stated as Z is sememe-as-parent of Y if the node X has the value Y for the method *to@* with the parameter Z, *AND* Z is a sememe, *AND* Y is a lexeme.

(4)   FORALL X,Z,Y,A,B Z[sem_parent->>A]<- X[to@(1,Z)->>Y] AND Z:
        sememe AND Y:node[to@(1,A)->>X].

which may be re-stated as Z is sememe-as-parent of A if node X has the value Y for the method *to@* with the parameter Z, *AND* Z is a sememe, *AND* Y is a node which has the value X for the method *to@* with the parameter A.

(5)   FORALL X,Y,Z X[synonym->>Y]<- Z[sem_parent->>X] AND
        Z[sem_parent->>Y] AND Z:sememe AND X:lexeme AND Y:lexeme.

which may be re-stated as X is a synonym of Y if Z is sememe-as-parent of X and Z is sememe-as-parent of Y.

Finally, *queries* might be likened to 'activation' of the network because they traverse the network to retrieve all the possible answers. In the following queries (see **Figure 2**), we retrieve all X and Y where X is sememe-as-parent of Y; the second query retrieves all X and Y where X and Y are related by synonymy. Note that in both instances, we are querying information not entered as facts, but rather based on what has been inferred by the application of these axioms to a knowledge base about nections only. **Figure 2** shows the results of the query in Ontobroker.

3. THE SEMANTIC WEB AND BEYOND.

3.1. RDF AND THE SEMANTIC WEB. The simplicity of RNN plus its applicability to all kinds of information storage suggests it may have a role to play in improving access to information on the web.
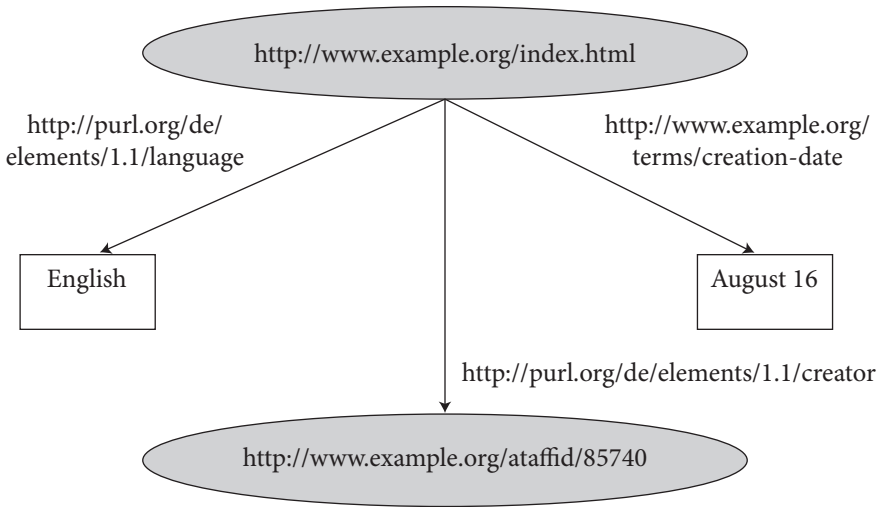
Figure 3. *Resource Description Framework (RDF) diagram.*

Paul Ford, author of the fictional *August 2009: How Google beat Amazon and Ebay to the Semantic Web,* refers to information storage as the 'trillion dollar question': 'when you have a whole lot of stuff arranged syntactically, in a given structure that the computer can chew up, how do you then get **meaning** out of it? How does syntax become semantics?'

Most attempts at creating a semantic web have focussed on Resource Description Framework (RDF) as the means for converting the vast collection of web resources, both documents and data, into machine-readable form.

As the *RDF Primer* (W3C 2004) explains, information is expressed in RDF as logical statements along the lines of a simple predicate structure consisting of Subject, Predicate, Object. For example, the following statements indicating who was responsible for creating a web page, its creation-date and language, could be represented graphically as shown in **Figure 3** with nodes, identifying the URI (Uniform Resource Identifier) of the web page, another URI for the person who created the web page, another for the date, and one for the language in which the web page is written. Arcs connecting nodes, are each labelled with a URI to indicate the relation between the nodes.

The *RDF Primer* illustrates how the node pair identifying the creator of the web page may be described in 'grammatical' terms:

- the *subject* is the URL http://www.example.org/index.html, i.e. the thing the statement describes (the Web page, in this case) ;
- the *predicate* is the word 'creator', i.e. a specific property/attribute (creator, in this case) of the thing the statement describes;
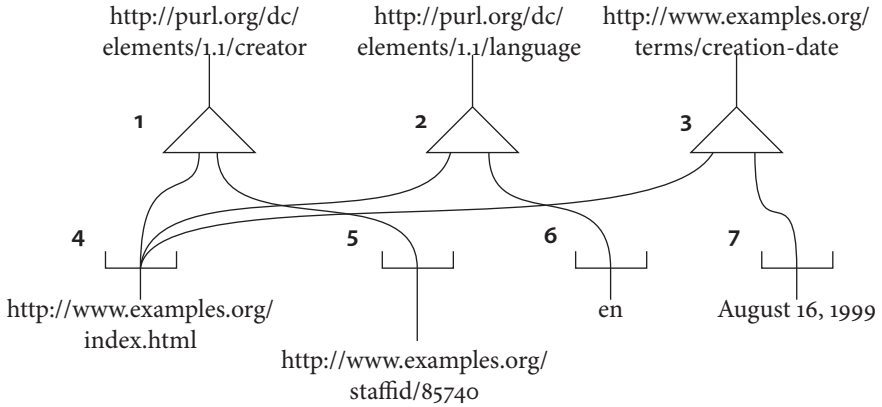
Figure 4. *Relational Network Notation (RNN) diagram.*

- the ***object*** is the phrase 'John', i.e. the thing the statement says is the value of this property/attribute (who the creator is), for the thing the statement describes.

Every node or arc is identified by a URI. The *RDF Primer* describes a URI as follows:

> The Web provides a more general form of identifier for these purposes, called the *Uniform Resource Identifier* (URI). URLs are a particular kind of URI. All URIs share the property that different persons or organizations can independently create them, and use them to identify things. However, URIs are not limited to identifying things that have network locations, or use other computer access mechanisms. In fact, a URI can be created to refer to anything that needs to be referred to in a statement, including
>
> - network-accessible things, such as an electronic document, an image, a service (e.g. today's weather report for Los Angeles), or a group of other resources.
> - things that are not network-accessible, such as human beings, corporations, and bound books in a library.
> - abstract concepts that do not exist physically, such as the concept of a creator.

3.2. RNN AND THE INTELLIGENT WEB. If RDF holds the promise of creating a semantic web, then I would suggest RNN opens up the possibility of an intelligent web. RNN can describe anything that can be described in RDF. Like RDF, nodes in RNN can be URI's which point to resources on the SemWeb. More importantly, RNN is driven by Relational Network Theory and incorporates developments in the theory which have

been shown to not only describe but also explain linguistic phenomena in a neurologically plausible manner.

The information shown in **Figure 3** is represented visually as RNN in **Figure 4** and in the Flogic code below:

```
node::DEFAULT_ROOT_CONCEPT.
uri::DEFAULT_ROOT_CONCEPT.

// LOCAL RELATIONS --------------------
node[to@(threshold,uri)=>node].
node[to@(threshold,uri,sequence)=>node].

// INSTANCES --------------------

"http://www.examples.org/staffid/85740":uri.
"http://www.examples.org/index.html":uri.
"http://purl.org/dc/elements/1.1/creator":uri.
"http://purl.org/dc/elements/1.1/language":uri.
"http://examples.org/terms/creation-date":uri.
"http://www.examples.org/staffid/85740":uri.
«August 16,1999»:uri.

Instance1:node[
    to@(2,"http://purl.org/dc/elements/1.1/creator",1) ->> Instance4 ;
    to@(2,"http://purl.org/dc/elements/1.1/creator",2) ->> Instance5 ].

Instance2:node[
    to@(2,"http://purl.org/dc/elements/1.1/language",1) ->> Instance4 ;
    to@(2,"http://purl.org/dc/elements/1.1/language",2) ->> Instance6 ].

Instance3:node[
    to@(2,"http://examples.org/terms/creation-date",1) ->> Instance4 ;
    to@(2,"http://examples.org/terms/creation-date",2) ->> Instance7 ].

Instance4:node[
    to@(1,"http://www.examples.org/index.html") ->>Instance1 ;
    to@(1,"http://www.examples.org/index.html") ->>Instance2 ;
    to@(1,"http://www.examples.org/index.html") ->>Instance3].

Instance5:node[to@(1,"http://www.examples.org/staffid/85740") ->>Instance1].
Instance6:node[to@(1,en) ->>Instance2].
Instance7:node[to@(1,"August16,1999") ->>Instance3].
```

The first three instances—represented diagrammatically as triangles, and in FLogic with three parameters for the to@ method—are what Lamb calls Ordered AND nodes, each having two lines in fixed sequence pointing downward from the URI for some attribute or property to nodes, the first of which is a URI identifying the web page being described, and the second URI identifying some descriptive information such as who is the author, when it was created, and in what language it is written. Taking Instance1 as an example,

(6)   Instance1:node[
           to@(2,"http://purl.org/dc/elements/1.1/creator",1) ->> Instance4 ;
           to@(2,"http://purl.org/dc/elements/1.1/creator",2) ->> Instance5].

Instance1:node means that **Instance1** is a kind of **node**, which is further described in the square brackets by the method **to@**. The first mention of the method **to@**:

           to@(2,"http://purl.org/dc/elements/1.1/creator",1) ->> Instance4

indicates that **Instance1** has the value **Instance4** for the method **to@**, which takes three parameters, the first being its threshold value, which is **2**, because there are two lines pointing downward; the next parameter indicates the URI associated with this instance of a node—*http://purl.org/dc/elements/1.1/creator*; and the third parameter, indicates the order of that pointer in a sequence, which here is **1** to indicate the first slot. The second **to@**:

           to@(2,"http://purl.org/dc/elements/1.1/creator",2) ->> Instance5].

indicates that **Instance1** has the value **Instance5** for the method **to@**, which again takes three parameters, the first being its threshold value, **2**; the next its associated URI – *http://purl.org/dc/elements/1.1/creator*; and the third parameter indicates the order of that pointer in a sequence, which here is **2** for the second slot.

Instance4 is an Unordered OR node pointing upward from the URI for the web page to URIs for each of the relations: creator, creation-date, language. Here the threshold value of the *to@* method is *1* because only one line or pointer is active at any one time.

The query

      FORALL Z,W <- Y[to@(2,Z,1) ->> I[to@(1,"http://www.examples.org/
      index.html") ->>Y]] AND Y[to@(2,Z,2) ->>T[to@(1,W)->>Y]].

will obtain the following information about the web page in question:

      "http://purl.org/dc/elements/1.1/creator",
        "http://www.examples.org/staffid/85740"

"http://purl.org/dc/elements/1.1/language", "en"
"http://examples.org/terms/creation-date", "August 16,1999"

4. CONCLUSION. Because neurological plausibility is the goal, Relational Network Theory is constantly being checked against the findings of neuroscience. As the theory develops, along these lines so too is its corresponding notation. Subsequent versions of the notation will incorporate those network properties motivated by the linguistic evidence and tested against the neurological evidence. Given its theoretical basis, Relational Network Notation may be the key to achieving a truly intelligent web.

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[1]   An earlier version of this paper appears in the *Proceedings of the 10th international conference on cybernetics and information technlogies, systems and applications*. July, 2004

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❧

THE RHETORIC OF 9/11: A TEXT LINGUISTIC CASE STUDY

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IN THIS TEXT LINGUISTIC STUDY of Billy Graham's Address at the National Prayer and Memorial Service at the Episcopal National Cathedral on 14 September 2001, I am looking at the text from a functional-semantic perspective with the goal of understanding its place in and contribution to the rhetoric of 9/11.

Coming as it did in the days immediately following the September 11 attacks and given the prominence of the occasion at which it was spoken, this text can be understood both in terms of how it responded to the immediately preceding events (*the horror, the shock, and the revulsion*), and by how it sought to shape the subsequent public response (*Whether to implode and disintegrate emotionally and spiritually as a people, and a nation, or whether we choose to become stronger…*). In the timeline of events subsequent to 9/11, this occasion and Billy Graham's address preceded President Bush's address to congress and the nation on 20 September.

1. REMEMBERING SEPTEMBER 11. 'September 11 will go down in our history as a day to remember', states Billy Graham in his address. Indeed as Tsiang points out, *September 11* now exists in our vocabulary as 'an expression that evokes the entire September 11 tragedy' (2004:440). Her study is based on a corpus consisting of transcripts from two CNN news-interview programs, the earliest transcript being from June 24, 2002, more than 9 months after 9/11. At the time this Billy Graham gave his address in the immediate aftermath of the attacks, *September 11* was only beginning to become cast as the tragic-laden term it is today.

2. MOTIFS IN GRAMMAR. The text is an instance of meaning which occurs in context of situation. Viewing this address, then, in the context of this national tragedy, we observe how its lexico-grammatical realization construes a number of motifs, among them: **unity** in the face of 'a new kind of enemy', and **hope** 'for the present, …and for the future'. These motifs are to be found in the grammar. They are realized not just in terms of lexical choice and the repetition of certain terms throughout the text (e.g. the motif of unity is supported by the repeated use of the phrasing 'come together… to V'; and references to 'this nation', 'our nation'), but also grammatically by means of those choices that contribute textual meaning (e.g. frequency of first person pronouns in thematic position), interpersonal meaning (i.e. clause type, whether interrogative or declarative; indication of tense, modality), and ideational meaning (i.e. process-participant-circumstance: who is doing what to whom).

3. PROCESS, PARTICIPANT, CIRCUMSTANCE. The ideational function of language is realized by the semantic system of transitivity. Transitivity analysis is concerned with the semantic configuration of process, participant and circumstance, or in other words the clause as a means of representing the processes of doing, happening, feeling, thinking, being, speaking, etc.

Billy Graham's references to himself emphasize his role as cognizant messenger engaged in verbal (say, assure, confess, pray) and mental (know, think, believe, accept, hope, doubt) processes. Repeated references to *we* (35 times); *our* (27 times); and *us* (18 times) help strengthen this sense of togetherness and unity in the face of tragic circumstances.

That the address is less an exhortation to action and more concerned with affecting a positive response is realized in part by the author's preference for attributing other than material processes—relational, mental, behavioural, verbal—to those whom he is addressing—the American people as victims of those described as having masterminded and carried out these 'twisted and diabolical schemes'.

Early on in the address, a distinction is made between 'those who masterminded this cruel plot' and 'those who carried it out' (3.11 [= paragraph 3, clause 11]). They are identified only by their deeds. Elsewhere they are referred to as 'those responsible' (3.13), and 'those perpetrators who took this on to tear us apart' (7.64). The deictic distinguishes them from us. Their actions are described as 'evil'; they themselves are 'a new kind of enemy'. In paragraph 3, in both instances cited above they are not the actors—other than as part of their defining deeds which are encapsulated within the nominalization itself—instead they are the recipients of what is being said ('we say to those who… and to those who…'), or they are the goal to be 'brought to justice' (3.13) Interestingly, in the excerpt which follows, the third such nominalization, although thematic, is neither grammatical subject nor actor in the clauses which follow:

> So those perpetrators who took this on to tear us apart, it has worked the
> other way—it's back lashed. It's backfired. (7.64-66)

The pronoun *It* is the grammatical subject of the next two clauses, and refers to *this* (in the post-modifying relative clause of the thematic nominalization), another instance in a chain of repeated anaphoric references to the events of September 11. We infer that, as it has worked out, 'Those perpetrators' are the targets of the resulting backlash, and their plotting has backfired. The point is that those responsible for September 11 are no longer the actors engaged in doing, they instead would be on the receiving end of the actions to follow.

The eleventh paragraph recalls the events of that day in vivid terms:

> We all watched in horror as **planes crashed** into the steel and glass of the
> World Trade Center. Those majestic towers, built on solid foundations, were
> examples of the prosperity and creativity of America. When damaged, those

> **buildings eventually plummeted** to the ground, **imploding** in upon themselves. (11.122-8)

The planes are not **Actors** in a material process, rather they are the **Medium** in an ergative structure with no mention made of those responsible for initiating these events. The World Trade Center has become a thing of the past, as the deictic element demonstrates: 'Those majestic towers', 'those buildings'—they are gone.

Processes attributed to God are either in the present or future tense: *God is…*; *…comforts, allows, understands, can be trusted, declares*; *…will never forsake, is going to give…* There is one exception, however, which is sandwiched between two present tense verbs:

> the cross tells us that **God understands** our sin and our suffering. For **he took upon himself**, in the person of Jesus Christ, our sins and our suffering. And from the cross, **God declares** 'I love you'. (10.102–07)

Calling the attention of his audience to the symbols of the cross 'all around us' in the National Cathedral, Billy Graham continues,

> The story does not end with the cross, for Easter points us beyond the tragedy of the cross to the empty tomb. It tells us there is hope for eternal life, for Christ has conquered evil, and death, and hell. Yes, there's hope. (10.110–15)

Neither is the tragedy of September 11 the end of the story. Whereas, over subsequent paragraphs, the vivid images of that fateful day are painted in past tense, the struggle to rebuild is described as having only just begun.

Just as the cross is the ***Sayer*** in a verbal process, so too the Bible *says, speaks* and *talks*. There is a noticeable contrast established between our words, which fail us, and *Bible words*, which offer hope:

> No matter how hard we try, words simply cannot express the horror, the shock, the revulsion we all feel over what took place in this nation on Tuesday morning. (2.8,9)

> The Bible words are our hope (4.21)

Paragraph 13 ends in the words of the old hymn quoted by Andrew Young, 'How firm a foundation'. It too speaks in the present tense.

4. RHETORICAL STRUCTURE. A text is organized into functionally significant parts, or spans, which together assemble what Mann and Thompson (1986) refer to as the 'rhetorical structure' of the text. Each span contributes some meaning to the text as a whole. Together these spans combine to form larger units in a hierarchical

organization with simple clauses at the bottom of the hierarchy, and the whole text as the root. If clauses are the most basic lexico-grammatical unit, whereas the text as a whole is a semantic unit, then how do we deal with those functionally-significant spans in between? What role does the lexico-grammar play in signaling relations between pairs of spans above the clause?

Lexico-grammatical features present within clauses, particularly those which are text-forming (i.e. logical and textual), assist the reader in understanding not only the flow of information but also the method of organization. Halliday identifies three types of clause expansion: elaborating ('equals', =), extending ('is added to', +), and enhancing ('is multiplied by', ×). One clause can elaborate on another through exemplification, clarification, or restatement; or a clause can extend the meaning of another by adding some new element, giving an exception, or offering an alternative; or a clause can enhance another through embellishment or qualification.

Relations between clauses may be symmetrical (paratactic) or asymmetrical (hypotactic). Apposition, for example, is paratactic elaboration; coordination, which includes both addition and variation, is paratactic extension. Parataxis is 'the relationship between two like elements of equal status, one initiating, the other continuing' (Halliday 1994:218). Halliday defines hypotaxis, on the other hand, as 'the relation between a dependent element and its dominant, the element on which it is dependent' (1984:218). Here the dependent element is identified as the β-element, and the dominant element as the α-element. The combination of elaboration and hypotaxis, for example, may be realized as a non-defining relative clause. Addition, replacement and alternation, where expressed by a dependent clause, represent the combination of extension and hypotaxis. Hypotactic enhancing clauses are usually introduced by a hypotactic conjunction (e.g. *when, since, as soon as, while, as, because, if*). Hypotactic relationships are non-symmetrical and occur between items of unequal status.

The same lexico-grammatical signals of clause expansion are also at work between spans across the hierarchy, contributing to the overall coherence of the text. Likewise, parataxis and hypotaxis not only describe relations between clauses at the level of clause-complex, but also apply to functionally significant spans further up the hierarchy. For this analysis, I have adapted Mann and Thompson's RST notation for representing the hierarchical organization of spans and also indicating whether the relations between spans are asymmetric (hypotactic) or symmetric (paratactic).

In **Figure 1**, a hypotactic relationship is depicted between the span consisting of paragraphs 2 tthrough 4 and two other spans, one for paragraph 5 and the other comprising paragraphs 6 through 10. The span with the vertical line extending from it is identified as the core of the larger span from which it derives (2–10), while those spans with lines drawn pointing toward this nucleus are its satellites.

These two satellite spans (5; 6–10) begin with the conjunction *but* followed by a question, which is then addressed in the subsequent clauses that make up that span.
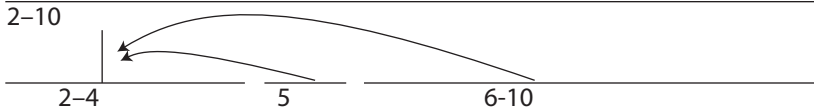
Figure 1. *Paragraphs 2 through 10.*
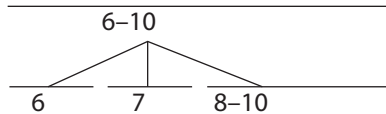
Figure 2. *Paragraphs 6 through 10.*
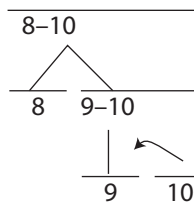
Figure 3. *Paragraphs 8 through 10.*

> But how do we understand something like this? (5.26)
>
> …
>
> But what are some of the lessons we can learn? (6.36)

Here the conjunction *but* is signaling expansion-by-extension of the idea developed in the core span, comprising paragraphs 2 through 4, with what follows in paragraph 5, and paragraphs 6 through 10.

Our sense of the rhetorical structure is further reinforced by the consistent use of lexico-grammatical features serving ideational, interpersonal and textual functions. Paragraph 5, for example, is very 'interpersonal' in nature, beginning with two interrogatives with a thematic WH-element, followed in the next clause by a thematic modal adjunct—*Perhaps;* and concluding with a clause complex in which the clause as theme—'I want to assure you'—further contributes to the interpersonal emphasis of this paragraph.

The span comprising paragraphs 6–10 (see **Figure 2**) similarly begins by posing a question: 'But what are some of the lessons we can learn?' And proceeds over successive paragraphs to provide a three-part answer, whose paratactic structure is signaled by three successively placed thematic conjunctive adjuncts: *First* (6.37), *secondly* (7.56), *Finally* (8.72).

Paragraphs 8 through 10 (**Figure 3**) focus on hope—of 13 occurrences of the word *hope* in this text, 11 occur in this span. Both paragraphs 8 and 9 open with a continuous thematic reference to *this event.* The rheme of the main clause in the first clause
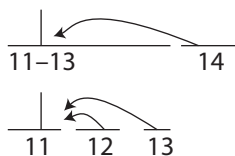
Figure 4. *Paragraphs 11 through 14.*

complex in paragraph 8 outlines what is addressed in paragraph 8—'hope for the present', and paragraphs 9 and 10—'hope for the future'. The second clause in paragraph 8 opens the span with the affirmation: 'Yes, there's hope'; the final clause of paragraph 10 closes with the same affirmation: 'Yes, there's hope'.

In paragraphs 11–14, tense figures prominently in configuring a sequencing of perspectives from the past, the present and the future (see **Figure 4**). In paragraph 11, Billy Graham reminiscing about his past, recalls a previous occasion when he heard Andrew Young speak at a prayer breakfast. He then describes the events of September 11 more graphically here than elsewhere in the text.

For the most part, Graham's use of tense is in keeping with his message of remembering the present, not the past. Paragraphs 12 and 13 deal with how the tragedy of September 11 should be responded to in the present. The conjunction *but*, which has occurred in thematic position throughout the text (paragraphs 4, 5, 6, 7), is also thematic in these two paragraphs. The emphasis is on contrasting then and now, past vs. present, September 11 vs. today:

> Yes, our nation has been attacked. Buildings destroyed. Lives lost. **But now** we have a choice… (12.131–34)

> This has been a terrible week with many tears. **But** also it's been a week of great faith… (13.143–44)

These two paragraphs sum up a theme that is developed throughout the text (the top-level rhetorical structure of the entire test is presented in **Figure 5**) and is very much in keeping with the occasion itself. 'This day of prayer and remembrance' was an occasion for not only remembering but also recasting the past; for acknowledging the tragic events of September 11, while at the same time affirming a new perspective, a new resolve going forward. Paragraph 14 is noticeably all future tense: 'we **will** feel… **will** know… He **will** never forsake us… God **is going to** give… this **is going to** be a day that we **will** remember as a day of victory'. The victims become the victorious.

This message, like any other, is the outcome of ongoing processes of construing human experience, enacting social relationships, and creating discourse. Choices were made at every turn of phrase with the purpose of creating and imparting meaning on every level. Most certainly, September 11 was already etched in the national psyche as a day to remember, but how 'this event' would be remembered was what
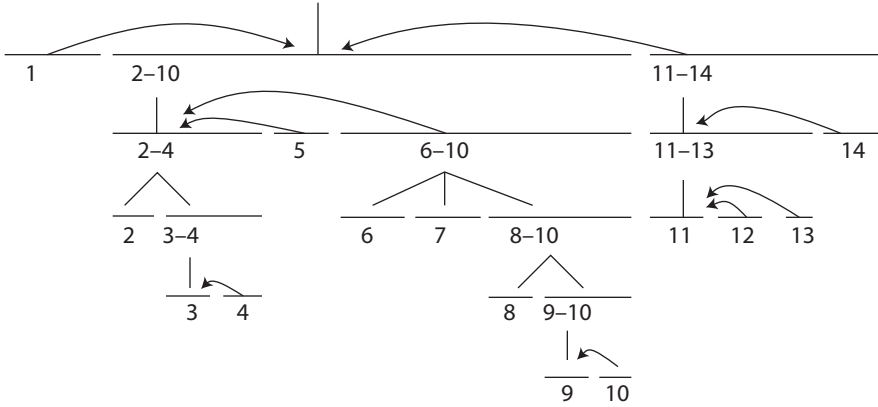
Figure 5. *Rhetorical structure at the top level.*

mattered. For Billy Graham, this National Prayer and Memorial Service was an occasion for turning a national tragedy into a call for unity and hope.

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APPENDIX A: BILLY GRAHAM: ADDRESS AT THE EPISCOPAL NATIONAL CATHEDRAL

Delivered 14 September, Washington D.C. on the Occasion of the National Day of Prayer and Remembrance

<p 1> <c 1> President and Mrs. Bush, I want to say a personal word on behalf of many people. <c 2> Thank you, Mr. President, for calling this day of prayer and remembrance. <c 3> We needed it at this time.

<p 2> <c 4> We come together today to affirm our conviction that God cares for us, whatever our ethnic, religious, or political background may be. <c 5> The Bible says

<c 6> that He's the God of all comfort, <c 7> who comforts us in our troubles. <c 8> No matter how hard we try, <c 9> words simply cannot express the horror, the shock, and the revulsion we all feel over what took place in this nation on Tuesday morning. <c 10> September eleven will go down in our history as a day to remember.

<p 3> <c 11> Today we say to those who masterminded this cruel plot, and to those who carried it out, <c 12> that the spirit of this nation will not be defeated by their twisted and diabolical schemes. <c 13> Someday, those responsible will be brought to justice, <c 14> as President Bush and our Congress have so forcefully stated. <c 15> But today we especially come together in this service to confess our need of God.

<p 4> <c 16> We've always needed God from the very beginning of this nation, <c 17> but today we need Him especially. <c 18> We're facing a new kind of enemy. <c 19> We're involved in a new kind of warfare. <c 20> And we need the help of the Spirit of God. <c 21> The Bible words are our hope: <c 22> God is our refuge and strength; an ever present help in trouble. <c 23> Therefore we will not fear, <c 24> though the earth give way, <c 25> and the mountains fall into the heart of the sea.

<p 5> <c 26> But how do we understand something like this? <c 27> Why does God allow evil like this to take place? <c 28> Perhaps that is what you are asking now. <c 29> You may even be angry at God. <c 30> I want to assure you <c 31> that God understands these feelings that you may have. <c 32> We've seen so much on our television, <c 33> heard on our radio, <c 32> stories that bring tears to our eyes, <c 33> and make us all feel a sense of anger. <c 34> But God can be trusted, <c 35> even when life seems at its darkest.

<p 6> <c 36> But what are some of the lessons we can learn? <c 37> First, we are reminded of the mystery and reality of evil. <c 38> I've been asked hundreds of times in my life <c 39> why God allows tragedy and suffering. <c 40> I have to confess <c 41> that I really do not know the answer totally, even to my own satisfaction. <c 42> I have to accept by faith <c 43> that God is sovereign, <c 44> and He's a God of love, and mercy, and compassion in the midst of suffering. <c 45> The Bible says <c 46> that God is not the author of evil. <c 47> It speaks of evil as a mystery. <c 48> In 1 Thessalonians 2:7 it talks about the mystery of iniquity. <c 49>The old testament prophet Jeremiah said <c 50> 'The heart is deceitful above all things' and beyond cure. <c 51> 'Who can understand it?' <c 52> He asked that question, <c 53> 'Who can understand it?' <c 54> And that's one reason we each need God in our lives.

<p 7> <c 55> The lesson of this event is not only about the mystery of iniquity and evil, <c 56> but secondly it's a lesson about our need for each other. <c 57> What an example New York and Washington have been to the world these past few days. <c 58> None of us will ever forget the pictures of our courageous firefighters and police, <c 59> many of whom have lost friends and colleagues. <c 60> Or the hundreds of people attending or standing patiently in line to donate blood. <c 61> A tragedy like this could have torn our country apart. <c 62> But instead it has united us, <c 63> and we have become a family. <c 64> So those perpetrators who took this on to tear us apart, it has worked the other way — <c 65> it's back lashed. <c 66> It's backfired. <c 67> We are more united than ever before. <c 68> I think <c 69> this was

exemplified in a very moving way <c 70> when the members of our Congress stood shoulder to shoulder the other day <c 71> and sang "God Bless America."

<p 8> <c 72> Finally, difficult as it may be for us to see right now, <c 73> this event can give a message of hope — hope for the present, and hope for the future. <c 74> Yes, there is hope. <c 75> There's hope for the present, <c 76> because I believe <c 77> the stage has already been set for a new spirit in our nation. <c 78>One of the things we desperately need is a spiritual renewal in this country. <c 79> We need a spiritual revival in America. <c 80> And God has told us in His word, time after time, <c 81> that we are to repent of our sins <c 82> and return to Him, <c 83> and He will bless us in a new way. <c 84> But there's also hope for the future because of God's promises. <c 85> As a Christian, I hope not for just this life, but for heaven and the life to come. <c 86> And many of those people who died this past week are in heaven right now. <c 87> And they wouldn't want to come back. <c 88> It's so glorious and so wonderful. <c 89> And that's the hope for all of us who put our faith in God. <c 90> I pray <c 91> that you will have this hope in your heart.

<p 9> <c 92> This event reminds us of the brevity and the uncertainty of life. <c 93> We never know <c 94> when we too will be called into eternity. <c 95> I doubt <c 96> if even one those people who got on those planes, or walked into the World Trade Center or the Pentagon last Tuesday morning thought <c 97> it would be the last day of their lives. <c 98> It didn't occur to them. <c 99> And that's why each of us needs to face our own spiritual need <c 100> and commit ourselves to God and His will now.

<p 10> <c 101> Here in this majestic National Cathedral we see all around us symbols of the cross. <c 102> For the Christian — <c 103> I'm speaking for the Christian now — <c 102> the cross tells us <c 104> that God understands our sin and our suffering. <c 105> For He took upon himself, in the person of Jesus Christ, our sins and our suffering. <c 106> And from the cross, God declares <c 107> "I love you. <c 108> I know the heart aches, and the sorrows, and the pains that you feel, <c 109> but I love you." <c 110> The story does not end with the cross, <c 111> for Easter points us beyond the tragedy of the cross to the empty tomb. <c 112> It tells us <c 113> that there is hope for eternal life, <c 114> for Christ has conquered evil, and death, and hell. <c 115> Yes, there's hope.

<p 11> <c 116> I've become an old man now. <c 117> And I've preached all over the world. <c 118> And the older I get, the more I cling to that hope that I started with many years ago, <c 119>

 and proclaimed it in many languages to many parts of the world. <c 120> Several years ago at the National Prayer Breakfast here in Washington, Ambassador Andrew Young, <c 121> who had just gone through the tragic death of his wife, <c 120> closed his talk with a quote from the old hymn, "How Firm A Foundation." <c 122> We all watched in horror <c 123> as planes crashed into the steel and glass of the World Trade Center. <c 124> Those majestic towers, <c 125> built on solid foundations, <c 124> were examples of the prosperity and creativity of America. <c 126> When damaged, <c 127> those buildings eventually plummeted to the ground, <c 128> imploding in

upon themselves. <c 129> Yet underneath the debris is a foundation that was not destroyed. <c 130>Therein lies the truth of that old hymn that Andrew Young quoted: "How firm a foundation."

<p 12> <c 131> Yes, our nation has been attacked. <c 132> Buildings destroyed. <c 133> Lives lost. <c 134> But now we have a choice: <c 135> Whether to implode and disintegrate emotionally and spiritually as a people, and a nation, <c 136> or, whether we choose to become stronger through all of the struggle to rebuild on a solid foundation. <c 137> And I believe <c 138> that we're in the process of starting to rebuild on that foundation. <c 139> That foundation is our trust in God. <c 140> That's what this service is all about. <c 141> And in that faith we have the strength to endure something as difficult and horrendous <c 142> as what we've experienced this week.

<p 13> <c 143> This has been a terrible week with many tears. <c 144> But also it's been a week of great faith. <c 145> Churches all across the country have called prayer meetings. <c 146> And today is a day that they're celebrating not only in this country, but in many parts of the world. <c 147> And the words of that familiar hymn that Andrew Young quoted, it says <c 148> 'Fear not, <c 149> I am with thee. <c 150> Oh be not dismayed <c 151> for I am thy God <c 152> and will give thee aid. <c 153> I'll strengthen thee, <c 154> help thee, <c 155> and cause thee to stand upon my righteous, omnipotent hand.'

<p 14> <c 156> My prayer today is that we will feel the loving arms of God wrapped around us <c 157> and will know in our hearts <c 158> that He will never forsake us <c 159> as we trust in Him. <c 160> We also know <c 161> that God is going to give wisdom, and courage, and strength to the President, and those around him. <c 162> And this is going to be a day that we will remember as a day of victory. <c 163> May God bless you all.

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LINGUISTICS WITHOUT SIGNS?
THING, CONCEPT, AND NAME IN HARD-SCIENCE LINGUISTICS

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For Adam

One of the dividends of Hard-Science Linguistics is that it provides a way to get at knowledge and beliefs using only the standard assumptions and criteria of all science and without recourse to untestable introspective evidence or the philosophical semiotic-grammatical tradition.

HARD-SCIENCE (HUMAN) LINGUISTICS[1] is the scientific study of how people communicate. Its foundations (Yngve 1996) are completely justified scientifically and designed to support studies throughout the whole area of general linguistics as an integral part of standard science.

Thus we embrace modern standard science[2] rather than the ancient semiotic-grammatical tradition or its modern descendants or any version of soft science. Our objects of study are people, the sound waves of speech, other communicative energy flow, and relevant parts of the real physical environment. We are interested in discovering the linguistic-communicative properties of people rather than defining the abstract grammatical properties of language, which is not a real-world object and cannot be studied in a hard science.

In order to free our studies from the many false, unjustified, and sometimes wild assumptions of traditional and extant approaches in linguistics, we accept only the four standard assumptions of the hard sciences. These are (1) that there is a real world out there to be studied; (2) that it is coherent, so we have a chance of finding out something about it; (3) that we can reach valid conclusions by reasoning from true premises; and (4) that observed effects flow from immediate real-world causes. All other initial assumptions are rejected by science.

In order to free our studies from ancient philosophical criteria, modern fads and fancies, and the arbitrary edicts of charismatic individuals, we accept only the two standard criteria of the hard sciences. These are (1) that the predictions of theory agree with the results of observation and experiment and (2) that the results of observation and experiment are reproducible. All other criteria are rejected by science.

Accepting only these criteria and assumptions, hard-science linguistics is freed from the scientifically unjustified assumptions and criteria of various traditional and extant approaches.

But we must ever be on our guard because traditional misconceptions linger on. Some time ago several of us, as part of our effort to reconstitute existing theory on the new hard-science foundations, spent months attempting to develop a proper scientific theory of concepts but without success. We didn't realize that in asking the question in this way we were introducing unsupportable assumptions from the semiotic-grammatical tradition that often assumes there is a ternary sign relation between a word, a concept, and a thing. Now that more is known about hard-science linguistics we are trying to circumvent such problems (Yngve 1996, Yngve & Wąsik 2004).

1. LINKAGE PROCEDURES. We will confront these matters through a particularly simple and transparent linguistic example, the children's playground game of tag, which appears to rely not on the complex physical energy flow of the sound waves of speech but only on the simple energy flow of a touch by the hand. This will help free us from ancient errors embedded in the semiotic-grammatical tradition and allow us to focus on foundational issues. The task of building a true linguistic science on the new foundation is now progressing in a number of areas of general linguistics[3].

The game of tag, known in many cultures by many different names, is played by a group of children who have reached a sufficient degree of linguistic maturity. One of the children is initially designated as 'it'. That child chases the others (who are 'not it') with the object of touching (tagging) one of them so as to become 'not it'. The one touched then becomes 'it' and tries in turn to touch one of the others.

The act of tagging takes two people and two things happen at the same time: the tagger becomes 'not it' and the tagged becomes 'it'. These two things can be combined at the linkage level in a single procedure with just one setting expression, whereas they were previously treated at the more elementary individual or participant level in a procedure with two separate setting expressions (Yngve 1996 §11.5, §13.4).

We set up a tag linkage [tag] for the subset of the children on a playground who are playing tag. We formulate a setting procedure (1) for the tag linkage [tag] with role parts for two unspecified tag players: **[X]** (the tagger) and **[Y]** (the tagged). Here we use the newer optional notation of enclosing system names in square brackets **[ ]** and the names of properties of systems in angle brackets < > written after the names of the systems.

(1)   [X]<it> x [Y]<-it> x [X]<touch>(Y) :: [X]<-it> x [Y]<it>

In this procedure, the properties **<it>** and **<-it>** (not it) are conditional properties of the role parts **[X]** and **[Y]**, the connector x means ***and***, and ***<touch>*** is a procedural property. The **(Y)**, written in parentheses, **( )**, is a representation of a role part which is an argument of the previously designated procedural property **<touch>**. The double colon is read as ***sets***. It means that the properties mentioned in the procedure are set to their new values as written on the right. Hence this is called a setting procedure.

Thus the procedure (1) means that in a tag linkage if the tagger role part **[X]** has the property **<it>** and the tagged role part **[Y]** has the property **<-it>** and the tagger **[X]**

touches the tagged **[Y]** then the **<it/-it>** property of the tagger **[X]** is set to **<-it>** and of the tagged **[Y]** is set to **<it>** and we say that **[X]** has tagged **[Y]**.

In this tagging procedure we have introduced for the first time the notational possibility of having, at the linkage level, two or more terms on the right in a setting procedure. This provides us with a needed notation for the details of linkage procedures, which we did not have before. It includes mention of the role parts and their properties and offers a simple way of writing the corresponding role-part procedures.

2. NAMES. Let us now introduce the children by name. We have an assemblage of children on the playground who are known to each other by name. There is Al, Butch, Carl, Dan, Eric, and the rest. It's straightforward to handle names in linkage theory.

The first thing to say about names is that names are not individual but social. Names do not belong to the physical children, like their fingerprints that identify each child, they belong to the children as social entities. A child's name is his because others in a certain group call him by that name and he answers to that name. These are social, not individual activities. The same child may have different names in different groups as on the playground, in the schoolroom, in the family, or perhaps when visiting a different ethnic household. Names are really relative to a specified group and should be represented as linkage and role-part properties.

We set up a linkage **[playground]** with a role part **[child]** for each of the children in the assemblage on the playground, some of whom may be playing tag. Names of the children in the playground linkage are properties of these role-parts and thus they are relative to the playground linkage and serve to distinguish the children from each other there. There is a categorial property 'name' with values 'Al', 'Butch', 'Carl', 'Dan', 'Eric', and so on for the rest.

Writing property names immediately after the system name, as we have been doing, and separating category names from their subordinate value name(s) by a slash (*/*), we can write the role parts for the linkage **[playground]** as (2).

(2)   **[child]<name/Al>, [child]<name/Butch>, [child]<name/Dan>,**
        [child]<name/Eric>, and so on.

Here the property **<name/Al>**, for example, is a property of one of the **[child]** role parts.

To represent that Al knows his name, that role part and the corresponding participant would also have other properties: procedures (following the notation in chapter 7 in the 2004 volume) such as, for example:

(3)   **[child]<name/Al>,<expect query> = <(sound heard)> +**
        <expect sound of 'What's your name?'>
        → <match> N <try again> Y <emit sound of 'Al'> →

Similarly, we can handle names of objects and significant parts of the physical environment if we can see them as functioning in linkages as prop parts and setting parts.

For example, the name *Paphiopedilium supardii* is the name of a beautiful orchid (Hansen 2000:151). In hard-science linguistics it can be understood as the name of a prop-part type in a linkage for an assemblage including such orchids and certain botanists, horticulturists, florists, orchid lovers, students, and interested members of the general public. In short,

Names are properties of functional parts of linkages.

They can only be handled properly in a hard-science linguistics, which has two orders of theory, individual and social, instead of just one, language or signs, which is all the semiotic-grammatical tradition has to offer us.

3. VALUES AND OTHER PROPERTIES. Orchids are often valuable. Value is also a social concept requiring linkage theory for formalizing. The value of a specified orchid bloom in a specified assemblage of orchid fanciers can be treated as a scalar property (Yngve 1996:248–53) of the prop part representing the orchid bloom in the linkage formalizing that assemblage. Its value may then be different in different assemblages and on different occasions as in a florist shop or in an auction. Other properties can be handled in an analogous fashion.

4. OBSERVING. We can now take an observer into account. We can do this in a human (hard-science) linguistics, which focuses on people, because an observer is also a person that can be represented in the theory just as the tag players can.

We set up a larger superordinate observing linkage (Yngve 1996 §18.4) in which the observer is represented as a role part and the subordinate tag linkage [tag] is a link part. When the observer, **who already knows several games, including tag**, observes the children to see what they are doing and understands that they are playing tag according to the tag linkage procedure of (1) instead of some other game (**note: this is a special sense of 'observe'**)*, the results of his observing and understanding become a property of the observer role part.

We first tried to represent this by simply putting the tag linkage procedure of (1) in angle brackets to represent that it is now a property of the observer. But there is no good evidence for this and it is probably wrong.

Observing in this case is a question of recognizing one out of a limited set of given possibilities, here the game of tag from among the games the observer already knows. So we turned to a different sort of analysis, one paralleling the top-down analysis of understanding speech in chapter 7 of Yngve and Wąsik 2004, an analysis in terms of expectation procedures.

Since the observer O knows several games including tag and is observing a group of children to see which game they are playing, the following procedure is suggested for the observer role part:

(4)   **[O]<expect game> = <(view of children playing)> + <expect view of**
         '[X]<it> x [Y]<-it> x [X]<touch>(Y) :: [X]<-it>x [Y]<it>' >
         <match> N <try again> Y → <See> <[X]<tag>(Y)> →

Trying again would be with expecting different games. The observer, on the basis of his prior knowledge of tag and other games, sees that child **[X]** has tagged child **[Y]** and concludes that the children are playing tag and that child **[Y]** is now 'it', which we represent as **[Y]<it>** in the **[tag]** link part. We can represent the observer's knowledge of **[Y]<it>** in the **[tag]** link part as a property of the observer role part as **[O]<[Y]<it>>**. Note that everything here is relative to the observer **O** as a role part in a superordinate linkage with the tag linkage **[tag]** as a link part.

We now know how an observer knows what game the children are playing: by observing it. We next want to know how the children themselves know what is going on.

In the first instance, a child who is 'it' and touches a child who is 'not it' knows that he is no longer 'it'. We represent this by the change in the **<it/-it>** property of the tagger role part to **<-it>**.

Then in the second instance the child also knows that according to the tag procedure (1) the child whom he touched is now 'it' and he will behave appropriately by avoiding him. This ability to recognize and avoid the second child requires that he have some kind of a remembered concept of the second child to match against his visual input.

A child can also observe the game as in a superordinate linkage, just as the observer can. But here, since the child is also at the same time playing a role part in the tag linkage that he is observing, this 'superordinate' observing linkage is actually running simultaneously in parallel with the tag linkage being observed. So the observing child can also see that the children are playing tag, and can in fact see tagging according to (4).

I owe to my colleague Lara Burazer an emphasis on the important fact that the observer role part is something that all of us take on in every linkage. It could be considered as parallel to other role parts a participant has in a linkage. This makes possible monitoring what is going on and learning from what others are doing, among other things. It also highlights the point that there is nothing absolute about linkage or other system boundaries and that the terms 'superordinate' and 'subordinate' may actually be misleading. Systems and their boundaries are introduced arbitrarily by the scientist as a convenient locus of theory. He can define the boundaries appropriately for the purpose of simplifying the theory and clarifying our understanding of what is going on.

So now consider the third instance. If the child observes the second child tag a third, he now knows that the second child is no longer 'it' but that the third child is now 'it'. He now avoids the third child instead of the second. This requires recognition of both the second child and the third child and requires that he have some kind of a concept of the third child as well as the second. It also requires that he have a concept of tagging such as was formalized in (4) above as the property **[child]<[X]<tag>(Y)>** and a concept of **Y** being 'it' or **[child]<[Y]<it>>**, as above.

We can test these statements by observing the tagging behavior of the three children. The observable ability of children to observe other tag players and determine how the person who is 'it' changes gives us the hard-science linguistics warrant to postulate properties of observing others and inferring the properties of others. The observable avoidance behavior is evidence that on the basis of visual input a child can recognize the child who is now 'it' from among the other children so as to avoid him.

The fact that a child can play tag is evidence that the child can selectively recognize and distinguish other children and have some kind of concepts of them and of the game.

Personal recognition is often important for communicating (Yngve 1996 §22.1). It's interesting that even for the simple game of tag it is essential. The energy of a touch by the hand is not sufficient as earlier thought. A child has to recognize each other child as someone who is either 'it' or 'not it', and this is primarily visual recognition.

5. CONCEPTS. We now note a very important conclusion: we have developed a hard-science linguistics concept of concepts! Whereas a frontal effort in that direction failed because of hidden false assumptions, if we work out HSL linkage theory on its own terms, things we have wanted to understand are clarified almost as a by-product.

We see that concepts are properties of role parts (like **[O]** and **[child]**) that represent knowers of the concepts in superordinate linkages. Concepts in hard-science linguistics are not abstract, as the tradition would imply, and not absolute but relative to linkages. **Concepts are properties of role parts of superordinate linkages**.

To avoid confusion with the many logical-domain concepts of **concept**, we will, on occasion, call this physical-domain concept of a concept, an **orthoconcept.** However, since everything in hard-science linguistics is already formalized in terms of properties of designated systems, the term simply names something we already have in the theory and a special term is not really needed except for convenience.

In sum, this is how a child knows what is going on. On the basis of knowing how to play tag according to (1), he knows that if he is 'it' and touches someone, he is now 'not it'. He knows that the child he touched is now 'it' and he remembers him visually in an orthoconcept so as to avoid him. He observes, according to his orthoconcept of tagging, formalized in (4), the child who is 'it' tag another child and knows that now the other child is 'it' and he remembers him visually in an orthoconcept so as to avoid him. He knows according to (1) that if he is tagged by the child who is 'it', he becomes 'it' and the child who tagged him becomes 'not it'.

Of course a child can observe himself playing tag and can have orthoconcepts concerning himself, and we can obtain evidence for this. This means that we can show and represent the fact that a child has self knowledge and with this we should be able to develop a hard-science linguistics theory of self-monitoring and perhaps also a hard-science theory of imitating.

6. MISUNDERSTANDINGS. How can we represent a misunderstanding? A misunder-
standing **<mis>** is truly a property at the linkage level. An observer **[O]** attributes it to
the linkage **[L]** as a linkage property as in (5).

(5)   **[O]< [L]<mis> = < [A]<[A]<it> x [B]<-it>> x [B]<[A]<-it> x [B]<it>> >**

This says that the observer role part **[O]** has a property (an orthoconcept) that the
linkage **[L]** has a property of a misunderstanding **<mis>** in that **[A]** has an orthocon-
cept that **[A]** has the property **<it>** and **[B]** has the property **<-it>** whereas **[B]** has an
orthoconcept that **[A]** has the property **<-it>** and **[B]** has the property **<it>**.

This explicitly introduces the observer and clarifies the nature of the misunder-
standing.

7. HARD-SCIENCE (HUMAN) LINGUISTICS. We have formalized here in hard-science
linguistics and thus brought within the physical domain of standard science cer-
tain matters of central interest in linguistic theory that have previously only been
approachable, if at all, through the insecure logical-domain methods of philosophy
and the soft sciences. In fact, we recognize in our theory (1) real-world persons and
physical objects, which are part of the real physical world that we study; (2) names,
which are properties of functional parts of linkages; and (3) concepts, which are prop-
erties of role parts of superordinate linkages. This is all within a scientifically justified
hard-science discipline that accepts only the standard criteria and assumptions of
the hard sciences and therefore does not lean on any assumptions from the troubled
ancient semiotic-grammatical tradition.

On the basis of the work on hard-science phonetics-phonology (Yngve 2004b),
work of others reported in Yngve and Wąsik (2004), and now this work, I think we
should no longer be trying to **reconstitute existing** linguistic theory on the new foun-
dations. That is not a shortcut and it will surely fail because of hidden false assump-
tions. We should instead be **rebuilding** linguistics entirely on the new hard-science
foundations. That is an exciting prospect that will surely succeed.

How should we then conceive of hard-science (human) linguistics as a discipline?
Without the older theoretically recognized levels of phonology, morphology, syntax,
semantics, and pragmatics, what is there to give shape to our new discipline?

We can organize it in the same familiar and time-tested way in which the other
hard-sciences (physics, chemistry, and parts of biology) are organized: into theoreti-
cal, observational, experimental, and applied branches. It must be realized that it is
research tasks that fall into this organization. Any given paper may well report tasks
that fall into one or more of these branches. This yields the organization of science
(6) suggested at the Hard-Science Linguistics workshop at the SLE meeting in Lyon,
France, at our coming-of-age celebration on September 7, 2003[4].

(6)   Hard-Science Tasks (standard criteria and assumptions)
          Hard-Science Linguistics Tasks
             Theoretical Hard-Science Linguistics Tasks
             Observational Hard-Science Linguistics Tasks
             Experimental Hard-Science Linguistics Tasks
             Applied Hard-Science Linguistics Tasks
          Physics Tasks
          Chemistry Tasks
          Parts of Biology Tasks
       Soft-Science Tasks (Other criteria and assumptions)
       Philosophy Tasks
       Etc. Tasks

Comments are welcome and may be sent to v-yngve@uchicago.edu.

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[1]   This is a revised version of a paper presented at LACUS Forum XXXI, University of
       Illinois at Chicago, July 27–31, 2004, under the title 'Linguistics without signs?' and in
       the Fifth Hard-Science Linguistics Workshop at the Societas Linguistica Europaea 37th
       Annual Meeting, Agder University College, Kristiansand, Norway, July 29–August 1, 2004.

[2]   Described and discussed in Yngve 1996 chapter 8 and Yngve and Wąsik 2004, chapters 2, 3,
       21 and 22.

[3]   Phonetics-phonology (Koenig 2004, Honorof 2004, Yngve 2004b), performatives
       (Sypniewski 2004a, 2004b), regulation of debate (Yngve 2004a), negotiating (Brezar 2004),
       educational discourse (Czajka 2004), reference and referring (Burazer 2004), linguistic
       change (Malak 2004, Mills 2004), ethnic communities (Wąsik, E. 2004), applied linguis-
       tics (Coleman 2004), stereotyping (Cisło 2004), translating (Ožbot 2004), scientific com-
       munication (Hutchins 2004).

[4]   Those in attendance were given hand-written copies of this as souvenirs.

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IV

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FROM LACUS
FORUM XXX

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The following two papers were originally presented at the LACUS Forum XXX in Victoria BC in 2003, but were not published in that volume. They are included in the present volume as a supplement to the previous volume.

A PRAGMATIC PERSPECTIVE ON THE INTERPRETATION OF MODAL VERBS IN CONSTITUTIONAL DOCUMENTS

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ACCORDING TO BLACK (1990:311), the constitution is the organic and fundamental law of a nation or state. Whether written or unwritten, it establishes the character and conception of its government, laying the basic principles to which the government must conform. It organizes the structure of the government, regulating, distributing and limiting the functions of its different departments. It prescribes the extent and manner of the exercise of the government's sovereign powers. The constitution, in other words, stipulates the rights and obligations of individuals in the organization or government or state that subscribes to it. The interpretation of the constitution determines the action of the judicial, legislative, and executive arms of government. The constitution could in fact be said to be central to the operation of all modern democracies.

The constitution is a document which must be carefully drafted to give precision to its interpretation. This is because, as Crystal and Davy (1968:172) say, human nature makes it imperative for individuals to become morbidly curious about their obligations, even to see if they may possibly be avoided.

One of the most important ways in which precision is achieved in the constitution and limits of power are imposed is found in the linguistic elements called modal auxiliary verbs—*shall*, *may*, *will*, *would*, *can*, *should,* etc.—which are used frequently in a constitution.

The modal auxiliary verbs with their peculiar meaning, and significance for understanding and shaping the constitutional actions of the citizens of any particular country or society are used fairly frequently. In the Constitution of the Federal Republic of Nigeria of 1979, which forms the basis of this research, the modals are used about one thousand three hundred (1,300) times. Curiously, however, these modal auxiliary verbs as deployed in the constitution, as in other legal documents, do not seem to have stable or fixed meaning as they are understood and used in linguistics and in ordinary non-legal communication. This propensity for variegated meanings and interpretations has given rise to legal disputes and confusion.

An example of the helplessness of legal authorities in the interpretation of the meaning of modal auxiliary verbs can be found in Black (1990:979):

'may': an auxiliary verb qualifying the meaning of another verb by expressing
ability, competency, liberty, permission, possibility, probability or contingency.

From this, it is fairly obvious that the meaning of *may* can be almost anything imaginable. Explaining further the meaning of *may*, Black (ibid.) states:

> In construction of statutes and presumably also in construction of federal rules, word 'may' as opposed to 'shall' is indicative of discretion or choice between two or more alternatives, but context in which word appears must be controlling factor.

Judging from the above, it seems obvious that context plays an important role in the process of interpreting the modal auxiliary verbs in a constitution. In other words, the modal auxiliary verbs play complementary roles with other words in context to determine the meaning and interpretation of constitutional directives and expressions. Both the modals and the totality of the expressions of which they are a part have to be understood in order for the constitution to have the intended effects on the government and the governed.

It is the goal of this paper to study the modal auxiliary verbs and determine a systematic way by which context determines one pragmatic output rather than another.

1. THE RESEARCH PROBLEM. Modal auxiliary verbs, in ordinary usage and in the constitution, have intractable meanings. Yet these meanings have been exploited to legal advantage and disadvantage because in constitutional contexts, there has been no systematic pattern for explicating the meaning of these modals. In fact, the legal exploitation has provided the only explication, and it is hardly systematic.

Most of the existing efforts at explicating the meaning of the modals have been solely from the syntactic point of view. Not much contextual support has been advanced for the systematic study of modals in the constitution. Yet legal experts and authorities have argued against making the law subservient to grammar. The specific questions which our paper aims at answering include:

(a) What meaning do modals have in the constitution?
(b) To what extent do modals determine the constitutional actions of citizens as a result of their inclusion in the constitution?
(c) What pragmatic signals could individuals employ to understand modals as elements of communication in the constitution?
(d) Is the meaning of modal auxiliary verbs in the constitution the same as in other contexts? Is it similar? Or is it altogether different?

2. LITERATURE OVERVIEW. According to Lyons (1968), most English words that we refer to as modal auxiliary verbs do not necessarily have a future reference. Admittedly, some of them (for example *will* and *shall*) can be used with the future in mind but they do not always refer to the future. Lyons sees modality as a category of scale and states that the modal auxiliary verbs:

may be categorized into a larger or smaller number of subdivisions (e.g. 'certainty', 'probability', 'possibility' or 'stronger' and 'weaker' or different kinds of 'obligation' and 'necessity'; and so on).

This observation is of great importance to the present study because the constitution and legal documents generally limit the exercise of power and privileges. However, because 'scales' might not be exact and precise in terms of their boundaries, misinterpretation can and does arise in the course of using the constitution, especially when one or the other of the modal auxiliary verbs has been used.

Perhaps of greater relevance to this paper is Lyon's view that there is a form of affinity in mood between imperative sentences and the modalities of wish or necessity, on the one hand, and between interrogative sentences and the modality of possibility on the other. By this, Lyons might be interpreted as meaning that modal auxiliary verbs which express wish or necessity are necessarily commands. This is relevant here, because we want to examine how the Constitution of the Federal Republic of Nigeria of 1979 has used modal auxiliary verbs as compelling or permissive linguistic signals for rights and obligations which are usually seen as unalienable since the adoption of the U. S. constitution.

Lyons further argues that there is an intersection between mood and tense. Although the category of mood is of little concern to this research, it is important to emphasise that some understanding of mood sheds light on modality, because invariably, the distinction between mood and modality is quite narrow. In Lyons' view, tense could neutralize and change the mood, and of necessity, the meaning of a modal auxiliary verb.

Lyons (1968), also specifically points out *shall* and *will* as not being just elements of the future tense, as traditional grammarians believed. Lyons believes that when a speaker uses *shall*, he 'puts himself forward as guarantor, as it were, of the truth or occurrence of the event he refers to'. This might be taken to have a two-way application:

(a) the speaker can put himself forward as the guarantor of an event he is involved in or
(b) he can put himself forward as the guarantor or enforcer of an event in which another person is involved.

As a result of this guarantee, *shall* and, to an extent, *will* are opposed to such other modals as *may* and *can*, as a result of the permissiveness of the latter two. These modals predominate in the constitution under examination and it is possible to say that, apart from 'can', which signals ability and permission and which is scarcely used in legal and quasi-legal documents, all others convey compulsion, obligation and willingness which are authoritatively enforced through the instrumentality of state powers.

In a similar vein, Halliday and Hassan (1976) and Palmer (1981) believe that modality is the speaker's assessment of the probabilities inherent in the situation or of the rights and duties of the addressee. Palmer (1981) further identifies two kinds

Modality Type

1. Modalization (Indicative type)
 → i. Probability (may be)
 → ii. Usuality (often)

2. Modulation
 → i. Obligation (has to, must)
 → ii. Inclination (wants to)
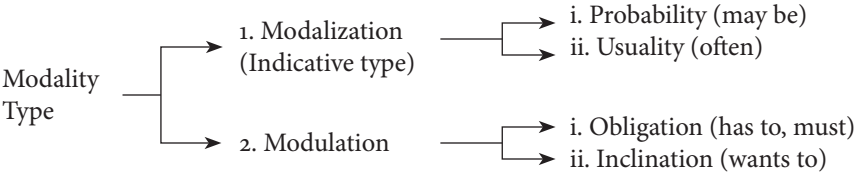
Figure 1. *Categories of modals.*

of modal: epistemic and deontic. Epistemic modals indicate the speaker's attitude towards the probability of what is expressed in his utterance, while deontic modals indicate the speaker's attitude to the addressee or to himself in terms of what is permitted or what is ordered. The deontic/epistemic distinction that Palmer has elaborated upon elsewhere (e.g. Palmer 1986, and 1990) is quite instructive for an understanding of the English modal verbs.

Halliday (1985), considers the modals under two subcategories (**Figure 1**). In this case, certain modal auxiliary verbs will typically be categorized as being indicative of modalization, in which case they are indicative of probability and usuality; and modulation, which indicates obligation, that which the speaker wants to do. In this case, what the speaker wants done is compulsory for the addressee while that which the speaker must or wants to do is mandatory on his part.

These categories from Halliday (1985) can broadly be matched with analyses by other scholars who have divided the modals into epistemic and deontic categories. Modalization corresponds to epistemic modals while modulation corresponds to the deontic type.

Halliday's insight fits quite well into the constitutional frame. The constitution, through the use of these modal auxiliary verbs, compels the addressee to perform some actions. It also holds itself bound to discharge certain responsibilities to the addressee.

Perhaps instructive for our research is Halliday's observation that the modal auxiliary verbs *can*, *could*, *may*, *might*, *shall*, *should*, *would*, *will*, *would*, and so on have overlapping functions and uses. If this is true, as the present study shows, then we need to make their uses and functions in the constitution explicit, because a constitutional context should not allow for vagueness or ambiguity.

Palmer (1986 and 1990), citing Jespersen (1924), Lewis (1946), Von Wright (1951), and Lyons (1977), considers the distinction between epistemic and deontic modality as part of the wider distinction between the use of language as a mode of action and language as a sign of thought. These views are also echoed by Leech (1971,1983) and Levinson (1983).

Epistemic modality refers to the notions of possibility, necessity and to any indication of the speaker's degree of commitment to what he says. For instance, a speaker can pass judgment or make an evidential sentence in four ways:

i.   that he is speculating about it
ii.   that he is presenting it as a deduction
iii. that he has been told about it

iv. that it is a matter of appearance only, based on the evidence of (possibly fallible) senses.

All four types are concerned with the indication by the speaker of his (lack of) commitment to the truth of the proposition being expressed. *May* and *must* are used in this sense. They express what is epistemically possible and what is epistemically necessary. *Will* also has an epistemic use. It can be used to make judgments about situations. In this case, it falls somewhere between *may*, which indicates a possible judgment, and *must*, which expresses the only judgment. *Will* in this regard expresses a reasonable judgment. In this respect, it can be reasonably asserted that *will* has a future reference because the future is not (fully) known, but it is a reasonable assumption that it will ensue. For instance, 'That will be his father' means that it is reasonable to say that that is his father.

Deontic modality, on the other hand, is concerned with action by others and by the speaker himself. According to Palmer (1971, 1974, 1979,1983, 1986 and 1990), the most important types of deontic modality in a study are Directives and Commissives. In deontic modality, *may* and *must* are typically used to express possibility, necessity and obligation. For instance, in saying 'You may/must come tomorrow', the speaker is imposing the possibility/necessity of coming upon the addressee.

From the pragmatic perspective, consideration has been given to functions of modal auxiliary verbs and especially to the context in which utterances are used. Speech act theory, which is one of the most important pragmatic insights, was evolved by Austin (1962) as a reaction against the Logical Positivist School of philosophy, which held that only utterances that have truth-value could be studied.

Based on Austin's earlier theory, only speech acts of constative and performative utterances were studied. Constative utterances are those which merely state a fact. For example, *The earth is spherical* can either be true or false. Performative utterances, on the other hand, are said to be utterances, the production of which constitutes the performance of the acts they name. The utterance of *I name this ship the Queen Tinubu* is a performative utterance. The use of the first person *I* and the verb *name*, which is in the simple present active form, confers the name *Queen Tinubu* on the ship, provided it is uttered in the right circumstances, by the right person. This distinction, which is regarded as the Former Theory of the speech acts was jettisoned by Austin because of its circular nature.

Austin then proposed what is generally regarded as the Latter Theory of the speech act. In this latter theory, three acts are said to be concurrently performed in the production of an utterance: a locutionary act, which is the act of saying something in the full sense of *say*; an illocutionary act, which is an act performed in saying something, the act identified by the explicit performative; and a perlocutionary act, which is the act performed by or as a result of saying.

Quite a number of sentences in the 1979 Constitution fall within these sorts of act. Although many of these statements are not uttered orally, they can be regarded as said by the constitution to the hearer (any Nigerian). The speaker in an oath can

be regarded as the oath maker while the hearer is the constitution or the person or persons authorized to listen by the constitution, i.e. to witness the oath. At the level of locution, the language employed in the constitution is considered intelligible to the listener. In terms of the illocutionary act being performed, much reliance has to be made on certain signals in what is said. For the purposes of this paper, those signals are the modal auxiliary verbs. The perlocutionary acts constitute the extent to which an effect is achieved by what is said.

Austin (1962), identified five categories of illocutionary acts on the basis of the conditions fulfilled: Verdictives, Exercitives, Commissives, Expositives, and Behabitives. Because of the circularity of this classification, Searle (1979) proposed an alternative classification based on five different categories.

(a) *Assertives*, whose successful performance depends on the truth or falsity of their utterer. Oath taking can be said to belong to this sub-classification. When an oath-taker undertakes an oath, the success of his assertion depends on how truthfully he/she carries out what is contained in it. Although this truthfulness or falsity lies outside the purview of what can be examined linguistically, it relies heavily on linguistic signals, especially as represented by modal auxiliary verbs, to interpret oaths properly under the constitution.

(b) *Directives*, the successful performance of which includes the speaker's desire that the listener perform some future action. Under this category, we have acts like command, request, beg, plead and so on. These acts, especially command and request, typically employ the modal *shall* in the constitution. They direct the listener to perform the act named or be liable to the punishment or the benefit allotted, as the case may be.

(c) *Commissives* are acts that commit the speaker (and not the hearer) to some future action. *Promise* is an important act here; hence, oath taking belongs here, too. Illustrations of this occur throughout the text of the constitution. For an utterance to constitute a promise, the speaker must be committed to an intention to actually doing (fulfilling) what his utterance names. When an individual makes an oath (or a promise), the oath commits him and not the hearer to perform the act named in the oath. In making promises and oaths, modal auxiliary verbs play a central role.

(d) Searle's *expressives* include psychological acts like thank, congratulate, apologize, condole, deplore, etc. Their successful performance relies on the sincere feeling of the speaker. These acts are rarely found in the constitution. In the 1979 Constitution of the Federal Republic of Nigeria for instance, no use of expressives is found.

(e) *Declarations* correspond fairly well with the performative utterances of Austin (1962). Their successful performance guarantees that the prepositional content corresponds to the world. The most important feature of this category of illocutions is that there must be an extra-linguistic institution and the speaker and hearer must occupy special places within this institution. The constitution

is that institution which represents the state. Declarations abound in the constitution. It can be said that most acts, which make one form of promulgation or statement, are declarations in the sense employed by Searle. It can also be said that the constitution is an extra-linguistic institution representing the state which gives all declarations the force of law.

Speech Act Theory as espoused by both Austin and Searle is very important for this paper, as it affords us a pragmatic perspective in the analysis of our data. This insight is combined with the relevant aspects of Palmer's (1990) syntactic analysis of modal auxiliary verbs. In specific terms, we analyse our data, applying the epistemic/deontic modality in combination with Speech Act Theory.

3. DATA ANALYSIS. *Shall* is the most frequently used modal auxiliary verb in the constitution. As used in the constitution, *shall* has varied meaning, depending on the linguistic context. Two broad uses can be identified. When the constitution's aim is to make a promulgation, the verb *be* is normally used:

Nigeria *shall be* a Federation consisting of states, and a Federal Capital Territory (Section 2(2))

In this section, the use of *shall* with the existential *be* automatically makes Nigeria a Federation and makes the existence of a Federal capital Territory mandatory. In Section 3(1) too, we have:

There shall be 19 states in Nigeria, that is to say…

As a result of this section, and especially as a result of the co-occurrence of *be* with the modal auxiliary *shall*, 19 states receive constitutional backing for their existence. It is therefore plausible to say that *shall*, when used with *be*, brings a particular state of affairs—abstract or concrete—into being.

The second use of *shall* in the constitution is to forbid some action or preventing a resulting state of affairs. In this instance, *not* is normally used with *shall*. Since semantically, *shall* means insistence, compulsion or even permission, when it is used with the negative element *not*, it prevents such meanings from coming into force. Examples of the use of *not* with *shall* abound in the 1979 constitution. A good example is found in Section 11(5)

For the purposes of Section (4) of this Section, a House of Assembly shall not be deemed to be unable to perform its functions so long as the house of Assembly can hold a meeting and transact business

In this extract, as in any other in which *not* is used with *shall* in a syntactic arrangement, the meaning to be derived is that of the prohibition of the act that is named.

The constitution in this section prohibits the House of Assembly from being unable to perform its function so long as it can meet and transact business. *Not* negates the proposition and expresses an obligation not to act.

In terms of acts performed as a result of using *shall* in the constitution, three concurrent acts are performed:

(a)   Deontic obligation/prohibition/promulgation
(b)   Epistemic future
(c)   Directive

In using *shall* the constitution is making an obligation either to vest in itself; or in a third person, the reader as a citizen or an official of state certain powers. An example is given in the following extract:

> The state shall foster a feeling of belonging and of involvement among the various peoples of the Federation, to the end that loyalty to the nation shall override sectional loyalties (Section 15(43)).

Deontically, the state is placed under an obligation 'to foster a feeling of belonging'. The use of *shall* is therefore performantive in that it performs the act that it names—that of fostering.

In a similar vein, *shall* performs an epistemic function, because it is virtually impossible to prohibit an act in the past or promulgate an act retrospectively.

The constitution also performs a directive function. When *shall* is used in the constitution, the constitution desires that the listener do or perform a future act. It is roughly equivalent to a command or a request by the constitution of the hearer of an act.

Can, on the other hand, is rarely used in legal documents and especially in the 1979 constitution where it is used once. In this instance, *can* denotes the ability of the House of Assembly to meet. That is, there is a prohibition on the state's power to take over a House of Assembly so long as it has the ability to meet and transact business.

Epistemically, *can* refers to a future time, as it is unlikely for the constitution to refer to the ability of a House of Assembly to meet in the past.

The first use of *may* in the constitution is to grant permission. Pragmatically, the constitution, which represents the power of the State, grants citizens rights which suit their roles in the republic. Thus when *may* is used in some instances, permission is granted. Two kinds of permission can be identified: compulsory and willing. In compulsory permission the constitution grants a person or persons power which it is mandatory for them to enforce:

> The National Assembly may make laws for the Federation or any part thereof with respect to the maintenance and securing of public safety…(Section 11(1))

The National Assembly is compulsorily permitted (i.e. required) to make such laws as stipulated. The permission is not optional but compulsory, because making laws for public safety is the primary function of the National Assembly. Under willing permission, the constitution grants individuals or bodies permission to enjoy certain rights or privileges, if it is their desire to enjoy them. Section 25(1) is a good illustration of this kind of permission.

> Subject to the provisions of section 26 of this constitution, any person who is qualified in accordance with the provisions of this section may apply to the President for the grant of a certificate of nationalization.

In this instance, the individual who has the interest is granted leave to enjoy this right by the constitution. This kind of permission involves no compulsion. It is important to say that either of these kinds of permission is at the same time epistemic, since any permission can only be given for the future. Permission is never retroactive.

The other use to which *may* is put in the constitution is to express possibility. This function coincides with its normal everyday use.

Will is peculiar to oath taking in the constitution. And uniquely among the modals studied, it has an ambivalent meaning. In one breath, it has its everyday ordinary usage, which is either weak or strong volition (willingness). On the other hand, *will* has a bidirectional meaning of insistence. That is, it involves both the speaker and the state. The speaker insists, because pragmatically, there is a non-linguistic authority that compels or insists on the speaker performing that act which is named in his utterance.

Would, on the other hand, is a modal verb rarely used in legal and quasi-legal documents including the 1979 constitution, where it appears only twelve times. It is used when there is a remote possibility of occurrence. It is accompanied by *be* and *have* to indicate what is probable in the future.

4. CONCLUSION. From our analysis and discussion, it makes sense to conclude that modal auxiliary verbs play more than just linguistic (synactic) roles in the constitution. They also play pragmatic roles as their use conveys meanings which impact upon citizens and the polity.

By and large, our analysis shows that Palmer's division of the modals into epistemic and deontic modals, attractive as it is as a syntactic instrument, is insufficient to provide a pragmatic basis for understanding the properties of the modals which only the context of use can properly explicate. There is, therefore, a need to combine Palmer's insight and previous related attempts with pragmatic insights for a proper understanding of modal verbs in legal documents

It is therefore to be expected that a serious study of the syntactic structure of these modals and their pragmatic interpretation would help in the understanding constitutional directives. This is what this research has set out to achieve.

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EARLY SHAPING OF SPATIAL MEANING IN THREE LANGUAGES AND CULTURES: LINGUISTIC OR CULTURAL RELATIVITY?

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IT HAS BEEN THE POINT OF DEPARTURE within psychology and linguistics that young children's understanding of spatial meanings is mainly based on a set of universal cognitive principles, which become mapped onto later developed linguistic concepts. Historically this view dates back to Piaget's theory of children's development of spatial cognition (Piaget & Inhelder 1948/1956) and also to his general view of cognition preceding language (Piaget 1926/72). Similarly Eve Clark (1973) suggests, in her study of the comprehension of prepositions by children acquiring English, that perceptual cues are good predictors of what guides infants in their acquisition of the meaning of prepositions. And furthermore infants in the early stage of understanding spatial words universally respond in the easiest motoric way in relation to the task. More recently Clark has explained the strategies relied on by infants in terms of a set of ordered rules that infants follow. The rules are described as follows:

> They (infants) place the small movable objects inside anything that can be treated as a container… and otherwise place it on top of anything that has an extended surface. These choices reflect ordered preferences where containers always take priority over surfaces (Clark 2003:153).

This suggests that if an infant is presented to a container object—such as a cup—in an upright and canonical orientation, the infant will most likely place a smaller object inside it. However, if the cup is presented in an inverted non-canonical orientation, we should instead predict that the infant would place the smaller object on top of it. In Freeman, Lloyd and Sinha (1980), infants similarly showed a preference for containers over surfaces. Clark argues that these non-linguistic strategies determine the order of acquisition of the English locative terms *in*, *on* and *under*. One of our main interests in this paper is to investigate whether this phenomenon is universal across different languages and cultures or whether the specific language being acquired by the child or the specific culture within which the children is acquiring its language play a role in determining the degree towards which an infant follows the rules proposed by Clark.

More recent work carried out by the developmental cognitive scientist Jean Mandler (1991, 1996) also supports the universal view on spatial cognition and language, suggesting that infants possess pre-linguistic, basic conceptual knowledge about distinctions in spatial relations or image-schemata of meaning packages, and that this knowledge is specifically sensitive to support and container relationships.

The above theories thus assume that universal cognitive processes and principles are responsible for children's development of spatial language and that language for space emerges in transculturally similar environments for action and perception. However, this universal account of the cognitive determination of spatial language development has been criticized and questioned by recent cross-linguistic studies.

Recent studies have stressed that categorization for language use is not universal and that language-specific morphology affects children's developmental pattern, as seen in their spontaneous and elicited spatial language production. Choi and Bowerman (1991) and Bowerman (1996) show that infants develop language-specific lexicalization patterns which are influenced by the linguistic categorization they have been exposed to. Slobin (1996) also argues that the structure of one's language may influence one's thought in 'thinking for speaking' as early as the preschool age. Whorf's linguistic relativity hypothesis (Whorf 1956) is echoed in this recent view that infants tune into the linguistically relevant categories early on.

Furthermore the existence of a universal conceptual inventory necessary for acquiring spatial language would led us to predict that similar error patterns will appear in children's early language production and in the cognitive strategies they apply while learning spatial words. However, evidence shows that children produce few errors and from the onset of acquiring their first language they seem to tune into the semantic categories within the particular language they are learning. This suggests that early language acquisition is less restricted by cognition than proposed and, since language typology shows that languages vary in how they partition the spatial array, children need to be flexible in shaping their cognitive categories to match these linguistic categories.

1. CULTURE IN DEVELOPMENT. Whereas there now exists some work demonstrating the role of language diversity in children's acquisition of language, culture has remained the neglected dimension in understanding how children acquire language. Schieffelin and Ochs (1986) shows that, across different cultures, the means and function of language as an important tool in the early socialization of children vary. However, these cross-cultural differences have mainly addressed the pragmatic aspects of the relationship between language and thought, whereas there has been little consideration, in language acquisition studies, of the cognitive consequences of cultural differences.

In addressing the question of linguistic relativity we thus have yet to learn more about the cognitive consequences of acquiring different languages in different cultures. The approach we take in investigating this aspect is the socio-cultural approach of Vygotsky (1978, 1986), viewing cognition in the context of culture-specific and semiotically mediated social practices. In Vygotsky's view language and culture are most appropriately understood as two sides of the same coin (Sinha & Jensen de Lopez 2000). Jensen de López (2002a, 2002b) recently investigated the development of spatial language and cognition based on a comparison of Danish and Zapotec (a Mexican indigenous language and community) children's comprehension of spatial language. The results show that Zapotec children perform better in comprehending *in-*, *on-* and *under-*configuring spatial relationships than Danish children do. This difference was in part due to the fact

that the two languages rely on very different semantic structures. While Danish uses prepositions to designate where objects and people are located, Zapotec relies on body-part regional nouns (Jensen de López in press a), which seem to be more transparent in their meanings than prepositions are in Danish. The Jensen de López study also identifies important cultural differences, which like the language-specific explanation, may help us understand the differences in the performance of the two groups of children (Jensen de López in press b).

In relation to the set of ordered rules proposed by Clark, Zapotec children do not seem to rely on theses rules to the same degree as Danish children do. Whereas Danish children overall did treat the container object as a putting-things-inside object, the Zapotec children proved just as likely to treat the respective object as a putting-things-on-top-of or a putting-things-underneath object. However, because language structure and culture practices mutually influence infants' conceptual development, it was unclear whether it was the language structure per se, the cultural practices, or both which were influencing the Danish and Zapotec children to perform in different ways.

One methodological reason why no clear answer could be given was that the study included two languages and two cultures only. In order to discover whether culture, as well as language, influences the cognitive or non-linguistic strategies children use to comprehend spatial language, we need to study at least three languages and cultures. In the present study Japanese was added in order to control for these variables. Before we present our predictions we describe the three languages and cultures forming part of the study.

2. THREE LANGUAGES AND CULTURES.

2.1. THE LANGUAGES. The three languages studied, Danish, Japanese and Zapotec are presented in the following. Danish is a Germanic language and of the three languages is most similar to English. Danish predominantly uses prepositions to refer to the location of things and people. The different spatial relational words conveying the notion of what in English is expressed as *in*, *on* and *under* spatial relationships can be seen in **Figure 1a** (overleaf). The figure illustrates the four main spatial relational configurations one can carry out with a container object (in this case a basket). The figure shows that the Danish preposition *under* 'under' conveys the meanings depicted by two of the configurations. Danish uses *under* to convey the location of an object underneath a basket while in a canonical upright orientation, as well as when the basket is positioned in a non-canonical, inverted orientation. The meanings of *i* 'in' and *på* 'on', on the other hand, only convey one of the four configurations illustrated in **Figure 1a**.

Although there is not yet a consensus as to the origin of the Japanese language, many linguists assign it to the Altaic language family. The spatial configurations *on, in* and *under* are typically lexicalised in Japanese by the three relational locative nouns, *ue*, *naka* and *sita*, respectively (see **Figure 1b**, overleaf). *Naka* mainly denotes inner regions of landmark objects. The meaning of *sita* 'lower region' is shared by the configuration of an object underneath a basket whether in canonical and upright or in
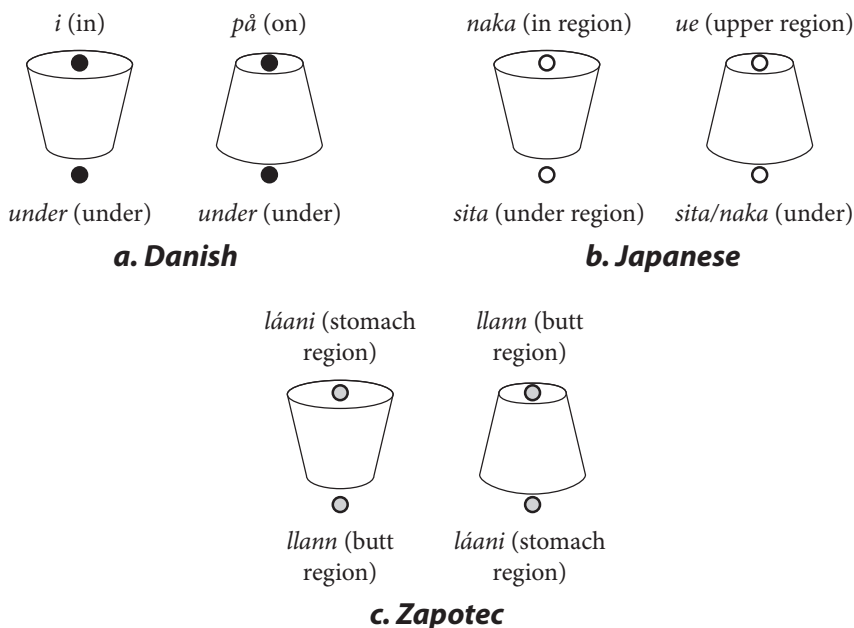
Figure 1. *The four prototypical spatial relational configurations available with a basket glossed for Danish, Japanese and Zapotec.*

noncanonical and inverted orientation. The notion of *ue* 'upper region' conveys the configuration of a support relationship.

Zapotec, which is an Otomaguean language, uses bodypart locative nouns, which are preposed nominals (Jensen de Lopez 2002a; Jensen de Lopez in press a). As in Japanese, these bodypart locatives refer to the region of a landmark object. The meaning of a bodypart locative in Zapotec is mainly derived from metaphorical extensions of the human body in an upright orientation (MacLaury 1989). However, in some cases, as in the case of *llaan* in **Figure 1c**, the meaning of a bodypart locative is motivated from usage of an intrinsic frame of reference (Levinson 1996). Zapotec uses two bodypart locative nouns to convey the four spatial relational configurations depicted in **Figure 1c**, namely *láani* 'stomach region' and *llaan* 'butt region'. Each bodypart noun thus conveys two of the depicted configurations. If we compare the particular word class used to refer to the location of objects and people in each of the respective languages, we notice that Japanese and Zapotec both use nominals to refer to regions, whereas Danish uses prepositions.

2.2. THE CULTURES. Both Denmark and Japan are highly industrialized cultures, whereas Zapotec is a remote, rural agrarian culture situated in the mountains of southern Mexican state of Oaxaca. The Zapotec culture also differs from the Danish and Japanese cultures in that it offers a smaller variety of different objects. Thus, in the Zapotec culture

objects are used with multi-functional purposes. This can be contrasted with the Danish and Japanese cultures, where many objects serve one specific function only, and are conventionally used with uni-functional purposes (Jensen de López, in press b).

When acquiring the full meaning of words for spatial relations, children rely on contextual and perceptual cues, including what they know objects are used for canonically. We need to take this notion into account when investigating children's understanding of words expressing spatial relationships. According to Clark's (1973) ordered rules, infants learning language may presume that when presented with a container object accompanied by a language instruction, the instruction probably will indicate that something should go inside the container rather than on top of or underneath it. However, if infants—as in the case of Zapotec children, through practice and observation, are accustomed to container objects equally likely to be used in an inverted orientation serving the purpose of covering something or constraining an object, they may not presume that container objects are exclusively for placing things inside. The following study addresses this issue in a preliminary analysis of Danish, Japanese and Zapotec infants' comprehension of instructions involving spatial relations using the configurations expressed in English as *in*, *on* and *under*.

In the Jensen de López (2002a) study the Zapotec children performed better than the Danish children in comprehending *in*, *on* and *under* configuring words. Jensen de López suggests that Zapotec bodypart regional nouns may be more transparent in their meanings than prepositions are in Danish. The Zapotec children also overall treated the container object differently than Danish children did. Jensen de López explains this as partly due to the role played by the Zapotec culture, in which people follow a general, multi-functional approach to objects and artefacts. We follow the line of the Jensen de López study and predict as follows.

1. If we assume that Zapotec bodypart nouns are more transparent than Japanese locative nouns, we may then predict that Zapotec children will perform better than Japanese children in comprehending *in*, *on* and *under* configuring words.
2. If we assume that the Japanese culture is like the Danish culture, in which many objects are uni-functional, we may then predict that Japanese children, like their Danish counterparts, should generally treat a container-object as a putting-things-inside object.

This set of predictions converges language acquisition into the act of learning the meaning of words through being a cultural participant and is consistent with Vygotsky's view. In order to validate these predictions we tested the three groups of children on their abilities to comprehend basic spatial relational instructions within their respective languages.

3. THE STUDY.

3.1. PARTICIPANTS. A total of 145 children participated: 71 Danish, 48 Japanese and 26 Zapotec. All the children were monolingual children living in their respective countries.

	Danish (N = 71)	**Japanese (N = 48)**	**Zapotec (N = 26)**
Age	30 months	32 months	31 months
Range	17–40 months	21–42 months	17–46 months
Std. Deviation	6.97	5.79	8.77

Table 1. *Mean range and standard deviation of ages for the three groups of children.*

The mean range and standard deviation of the three groups are presented in **Table 1**. There were no between-group differences in age distribution (Kruskal-Wallis test).

3.2. PROCEDURE. The three groups of children were presented with a language comprehension task in which they were told to place a piece of corn-kernel² either *in*, *on* or *under* a basket which was presented to the child in two conditions: a) a canonical upright orientation and b) a non-canonical inverted orientation. The following examples show how the lexicalization patterns of the three languages differ in how each of them renders the English utterance 'put the corn kernel on the basket':

(1)　Danish:　*læg*　　*majsen*　*på*　　*kurven*
　　　　　　　lay.IMP　corn.the　PREP　basket.the
(2)　Japanese:　*botan*　*o*　*kago*　*no*　*ue*　*ni*　　*oite-kudasai*
　　　　　　　　button　ACC　basket　GEN　LOC.N　LOC.PAR　put.IMP
(3)　Zapotec:　*bzuub*　　　*llub*　*llaan*　　　*dxim*
　　　　　　　lay.COMPL　corn　BODYPART.LOC　basket

Each response was coded in accordance with the end-state of the child's action, and coded language-independently. The data was analyzed for comparison of the proportion of correct responses and for comparison of the types of cognitive strategies reflected in the main error pattern produced by each language group.

4. THE RESULTS. The Zapotec children produced a greater proportion of correct responses than the Danish and Japanese children. This pattern was present in both experimental conditions, the canonical/upright and the non-canonical/inverted condition. **Table 2** shows the distribution of correct responses across the three language groups. The children's failures to respond to the task were excluded from both analyses.

Overall, the three groups of children were homogeneous in that they all responded by primarily placed the corn kernel inside, on top of or underneath the basket. The Zapotec children were the only group performing at a ceiling level, and this was to the *láani* instruction, when the basket was presented in the upright condition. They also performed better than the Danish and Japanese children on these items, when the basket was presented in inverted condition, although they were not at a ceiling level. The Japanese children as a group produced the lowest proportion of correct responses,

Trial condition	Danish children			Japanese children			Zapotec* children		
	i	*på*	*under*	*naka*	*ue*	*sita*	**láani*	*llaan*	**láani*
Upright	91%	26%	16%	85%	38%	6%	100%	50%	100%
Inverted	41%	88%	45%	45%	68%	9%	70%	87%	70%

Table 2. *The distribution of correct responses in % by trial and for each nation. *Because the Zapotec bodypart noun* láani *(stomach region) conflates the notion of inside an upright basket and under an inverted basket, the Zapotec children only received 4 trials.*

Error Type	Danish	Japanese	Zapotec
In-errors	**23%**	20%	7%
On-errors	11%	**16%**	7%
Under-errors	3%	1%	**15%**

Table 3. *The three dominant error types across the language groups (% errors of all the responses).*

and this was in response to the *sita* instruction, where only 6% of their responses were correct in the upright condition and 9% correct in the inverted condition.

We were also interested to know how the three groups of children responded to the task independently of whether they were able to respond correctly. We find that children's response strategies are informative about their cognitive strategies in a different way than correct responses are. In order to appreciate the cognitive strategies underlying children's response patterns, one needs to look at the types of errors produced by each of the language groups. We suggest that an analysis of error patterns may serve as a window into the particular cognitive strategies applied by children.

4.1. ERROR PATTERNS. Consistent with the results of the analysis of correct responses, the three language-groups predominately produced errors of the type putting the corn kernel inside the basket, on top of or underneath the basket in an inverted orientation. We analysed each of these three error types, comparing the proportion of errors produced by the three language-groups. The results are depicted in **Table 3**. Once more, these results represent proportions of errors where the children's failures to respond have been excluded.

For the *in*-errors we found that the Danish and Japanese children produced relatively similar amounts of this error type and they produced significantly more in-errors than the Zapotec children did, *p*=.01 on a Kruskal-Wallis test. For the *on*-errors we found that the Japanese children produced significantly more errors of this type than the Danish or the Zapotec children did. The difference between the frequency of *on*-errors produced by the Japanese and Zapotec children was highly significant, *p*=.00 on a Mann-Whitney U test, and the Danish and Zapotec children approached significance, *p*=.07 on a Mann-Whitney U test. Finally the differences between the relative

frequencies of *under*-errors produced by the three language groups showed a reversed pattern in that the Zapotec children produced significantly more errors of this type compared to the Danish and Japanese groups. The difference between the Zapotec and Danish children was significant, *p*=.01, and for the Zapotec and Japanese children, the difference was significant at *p*=.00 on a Mann-Whitney U test. The Danish and Japanese children did not differ in the relative proportion of *under*-errors they produced. Hence, each of the language groups seemed to have developed a particular 'preference' concerning the dominant error type the children primarily engaged in while responding to the task. The Danish children mainly produced errors that consisted of placing the corn kernel inside the basket, while the Japanese children, although the Japanese children also produced a relatively high proportion of the error type consisting of placing the object on the surface region of the inverted basket. Finally the Zapotec children produced at higher preference for the error type consisting of placing the corn kernel underneath the inverted basket compared to the other two groups.

5. DISCUSSION AND CONCLUSION. From this cross-cultural and cross-linguistic study of children's early comprehension of the spatial relational instructions of placing an object in, on or under a basket across three different languages, we found that Zapotec children acquiring bodypart locatives performed better than Danish children acquiring prepositions and Japanese children acquiring locative nouns. Thus our first prediction that Zapotec children perform better than Japanese children in comprehending *in*, *on* and *under* configuring words receives support. Furthermore, the Danish and the Japanese children differ considerably across the *under* and *sita* trials. The Danish children performed better in comprehending *under* than the Japanese children did in comprehending *sita*. *Sita* thus seems to be more difficult to comprehend in acquisition than the Danish preposition *under* and the Zapotec bodypart locative *láani*.

The three groups of children also showed different error patterns. First, Zapotec children, unlike the Danish and the Japanese children, produced a higher proportion of the error-type of placing the corn kernel under the inverted basket. The error pattern produced by the Zapotec children may be explained as motivated by the fact that *láani* 'stomach region' conveys the notion of inside as well as under and is not constrained by the notion of support from gravity. This semantic overlap may influence the children to produce more errors of the type *under* as opposed to the error pattern of placing the corn kernel inside or on top of the basket. However a language-specific explanation does not account for why Danish children produce *in*-errors or why Japanese children mainly produce *on*-errors more frequently than the remaining two language groups. In the Danish and the Japanese cultures, on the other hand, baskets are usually used as containers in an upright orientation, which may explain the frequency of *in*-errors produced by children from these two industrialized cultures relative to Zapotec children from a non-industrialized culture. This is in accordance with our second prediction.

When looking closer at the data in order to explain why the Japanese children produced *on*-errors relatively more frequently, we notice that this was specifically to the instruction of placing the trajectory object in a *sita* relationship with the basket, when

this was presented in the noncanonical and inverted orientation (Hayashi, 2001). This specific trial received the fewest correct responses from the Japanese children suggesting that they found it difficult to understand the meaning of *sita*. They compensated for this by placing the trajectory-object on top of the inverted basket, which is the easiest motoric solution. In other words, the Japanese children's frequent *on*-errors might be due to the specific problem presented to them in acquiring the meaning of *sita*.

The study supports the view that children bring to the language learning task prior experience of the social usage of everyday objects and may rely on this experience in acquiring the categories and meanings conveyed by language. It also supports the view that language structure is an important influential factor in learning a language. However more cross-cultural and cross-linguistic research is warranted. In short our study is in accordance with Vygotsky's socio-cultural approach to language learning.

[2]   In the Japanese experiment the corn-kernel was substituted for a button.

[3]   One should be cautious in comparing the meaning of spatial words across typologically different languages and drawing conclusions as to which group of children acquires spatial words earliest. In other word it is important to keep in mind that the task of the children simply may vary, as does the typology of their language.

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LANGUAGE INDEX

This index contains references to languages, language groupings (families, subfamilies, etc.) and scripts (writing systems) or other methods of language representation as they are analyzed or otherwise mentioned in the text. Due the prevelance of English, all references or use of English for purposes not related specifically to the analysis of English as a language, such as glosses or concept labels, are excluded. Language names are in **bold face**, language families and groupings are in BOLD SMALL CAPS, and names of scripts or other language representation systems are in ***bold-italic***.

COLOPHON

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